CALHOUN COUNTY, ILLINOIS:
A STUDY IN GEOGRAPHIC LANDSCAPES

BY

EDWARD VOGEL

A. B., Carleton College, 1929

THESIS

SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF
MASTER OF ARTS IN GEOGRAPHY IN THE GRADUATE SCHOOL
OF THE UNIVERSITY OF ILLINOIS, 1939

URBANA, ILLINOIS

PREFACE

Calhoun County is, to most persons, merely a place somewhere in southern or western Illinois, where they raise apples. This thesis is an attempt to treat the county as a regional unit and to set down certain facts and interpretations of the natural and cultural landscapes. The county is of importance to the rest of the state chiefly because of its commercial apple production. Though apples are the leading cash crop, there are tremendous limestone resources, the utilization of which is awaiting capital and transport facilities.

The study of this isolated section, nestled between the Mississippi and lower Illinois Rivers, has been an extremely interesting one. The writer entered the county by way of the Hardin Bridge (the only one across either river into the county) and found himself in one of the few unglaciated sections of the state. Calhoun County citizens proved themselves to be generous and very hospitable. Audiences were readily granted and inquiries promptly answered. The varied topography and vegetation of the bluffs, rolling uplands, and river bottoms have intrigued the author to the extent that an attachment for this region has been developed.

The author is indebted to the following in Calhoun County for hospitality shown and information given: Mr. J. E. Allison, farm advisor, and the entire Farm Bureau Staff; Mr. A. Campbell, postmaster; Mr. Campbell, editor of the Calhoun News; Judge Worthy; the Wintjen family; Miss Cuba Turneman, County Supt. of Schools; Mr. George Aderton; Mr. & Mrs. Paul Aderton; Mr. A. H. Cottle, all of Hardin; the B. & O. Station agent at East Hardin; Mr. Fontaro, commercial fisherman of Kampsville; Mr. Geo. F. Carpenter, school teacher of Batchtown; Mr. Wm. Simon of Batchtown; Mr. Albert Schulze of Schulze Brothers Nursery near Golden Eagle; Mr Paul Horter, owner of the Golden Eagle Quarry; and Mr. Paul Ringhausen of Hamburg. Thanks are also extended to any others whose names may have been inadvertently

omitted.

The author is also indebted to the following members of the university staff for helpful advice and information: Dr. David Thompson, Dr. Carl Mohr, Mr. L. R. Tehon, and Mr. Frank Dollrose of the Natural History Survey; Mr. James Davis of the Forestry Division of the Dept. of Agriculture; Dr. J. W. Lloyd of the Pomology Division of the Dept. of Agriculture; and Dr. J. H. Burgy and Mr. D. A. Price of Geography.

Special thanks are due Mr. C. Marsh, Highway Engineer at Springfield, for statistics and photograph prints of the Hardin Bridge; and Mr. H. M. Newell, head of the Division of Markets at Springfield, for statistics on apple production and shipments. Mr. Robert Mohn, Spray Residue Laboratory Assistant at Hardin and student at the university, was indispensable; he was the author's contact man in Calhoun County, as well as the "official" photographer--all photos in this thesis (save for the prints of the Hardin Bridge) are the product of his skill with the camera.

Dr. J. L. Page of the Geology and Geography Department, has been especially helpful with his encouragement and suggestions in the writing of this thesis.

December, 1938. E. V.

CONTENTS

INTRODUCTION

POSITION & SIZE

Calhoun County is the "apple core" of Illinois. The county maintains a somewhat isolated position between the Mississippi and the lower Illinois Rivers. The Mississippi bounds the county on the west and south, the Illinois on the east, and Pike County on the north. The topography features a rough limestone plain surrounded by river bottom on all sides, save along the north. The only bridge is the Joe Page Bridge crossing the Illinois River at Hardin. Air line distances from Hardin are seventy miles to Springfield and Quincy, Illinois and only forty miles to St. Louis, Missouri.

The county is one of the smallest, being only 261.67 square miles in area. East and west the linear distance is approximately seventeen miles along the Pike County border and only about four miles on a line through Gilead. The entire county lies just to the east of the 91° meridian. The greatest length north and south is thirty-seven miles, roughly bisected by 39° north latitude. The U. S. Census for 1930 lists the population at 8,034, though the 1938 estimate is placed at 8, 350. Only four Illinois counties ranked lower in total population in 1930.

HISTORIC SKETCH[1]

Calhoun County is supposed to have been first visited by white men in 1673, when Marquette and Joliet, on their trip up the Illinois River, landed several miles above the present site of Hampsville. LaSalle followed in 1680. The first permanent white settler, O'Neal, made his home in the southern tip of the county in 1801. French and English settlers followed after the War of 1812. This region was part of the "Military Tract" set aside by the national government for the bene-

---

[1] Based on information from "History of Calhoun County" by George W. Carpenter.

IDENTIFICATION MAP

Calhoun County Precincts

(From Calhoun County Farm Bureau)

Scale: 1 inch = 4 miles

PLATE I

fit of soldiers, who had served in the War of 1812.

In January, 1825, the southern section of Pike County officially became Calhoun County in honor of John C. Calhoun, the great southern statesman, with Gilead as the first county seat. Hamburg was the temporary headquarters during part of 1847, Hardin becoming the permanent seat later in the same year. Some of the other early settlements were Hutchtown, Brussels, Deer Plain, Kampsville, and Kampen.

Lumbering, in some phase, was the earliest industry of importance. The chief products were barrel staves, cordwood, and poles. Coal mining started near Golden Eagle about 1840, though it never reached much importance. An excellent grade of brick was made near Winnebergor from about 1880 to the turn of the century, an excellent grade of clay having been found there. Corn mills were quite prominent. The first bank was the Bank of Calhoun County at Hardin; it has been in existence since 1909. The first orchards were set out prior to 1830, though the exact date is a debatable question.

The only important mode of transport to distant parts was by steamboat. The ferry boat early became an important transport adjunct. The steamboat, with its accompanying barges, retained its prominence until about 1925. The first and only bridge was constructed across the Illinois River at Hardin and opened for traffic in 1931. Transportation within the county was by oxen in the early days, though soon followed by horse-drawn wagons. No railroad has ever been constructed in the county, so that Calhoun's isolation had to be first penetrated by the automobile and the motor truck.

NATURAL FEATURES

CLIMATE

TEMPERATURE

Calhoun County is situated just south of the northern boundary of what Koeppen denotes as Cfa climate. The summer months are warm and the winters are mild, with no marked dry period. This area is subject to temperature extremes. Exact data on the climate of this county are not available, as there is not a single official temperature or rainfall record maintained in the region under study. Estimates have been made, based on a composite average of three stations for the temperature and frost data:[2]

1. Griggsville, northern Pike County, Ill.

2. Whitehall, northern Greene County, Ill.

3. St. Charles, 10 miles south of Golden Eagle, in Ms.

The average annual temperature is approximately 55°F. The average maximum temperature is about 68°F.; the average minimum temperature is 44-45°F. The highest temperature ever recorded is in the neighborhood of 110°F. The lowest is 25°F. below zero, recorded in February. The lowest January temperature is 28°F. below zero. It should be noted that there are differences in these averages within the county, not only from north to south, but also between the upland area and the river bottoms. There is during the year an average range of 80°F. between winter and summer and a range of 135°F. between the extreme recordings.

LENGTH OF THE GROWING SEASON

Frost data are of value in this "Apple Kingdom." The average date of the last killing frost in spring is about April 15. The average date of the first killing frost in autumn is after Oct. 20. The latest killing frost (recorded at all three

---

[2]Data from the U. S. Weather Bureau, Climatic Summary of the United States. Added data from the private files of D. A. Price.

stations) is May 25. The earliest killing frost in autumn is during the last week of September in the north and the first week of October in the south. The growing season ranges from 185-190 days in the north to 190-195 days in the south. Again one must beware of local differences within this area, with the orchards of the uplands often enjoying a longer growing season than the cornfields of the bottoms.

PRECIPITATION

Precipitation data have been estimated from the rainfall records of the following three stations:

1. Pearl, southeastern Pike County.

2. Whitehall.

3. Grafton, southern Jersey County.

The average annual rainfall is between 35-40 inches. Fortunately, about 60% of this total falls during the summer half year. The months of heaviest rainfall are May and September, with about 4 inches each. The average February rainfall is 1-2 inches.

The rainfall is on the whole quite reliable during the critical months of May, June, July, and August. The following table indicates the reliability:

Table I--Number of Times Rainfall Totalled Less Than One Inch

Station	No. Yrs.	May	June	July	August
Pearl	15	1	1	4	2
Whitehall	34	3	1	3	4
Grafton	37	4	3	3	4

Only in May and June of 1914 did successive months have less than one inch at Grafton. The same was true at Whitehall for July and August of 1936.

WEATHER TYPES

Calhoun County lies in the Westerly wind belt the year round. As a result, cyclonic precipitation prevails during the winter half year, while convectional rainfall dominates during the summer months. Winds are more often from the southwest than from any other single direction. During the winter months the winds are

largely northwesterly and during the summer season southerly or southwesterly.

PERCENTAGE OF SUNSHINE

A factor of prime importance to the orchardist is the percentage of sunshine. During the late summer and autumn months there is about 60% of the total possible; this sunshine is valuable in producing a highly colored fruit, resulting in better prices to the grower.[3]

---

[3]Data from Atlas of American Agriculture—Part II Climate—Section B: Temperature, Sunshine, and Wind.

LAND FORMS

Topographically, Calhoun County is a rough plain having a limestone ridge or backbone, flanked on both west and east by alluvial bottoms. Between the Illinois and Mississippi facing bluffs, this ridge or upland sector varies in width from two and one-half miles at Lead Hollow and Salt Spring to ten miles along the Pike County border. The upland area is elevated from 100 ft. to nearly 400 ft. above the bottom lands. The entire county is unglaciated, and topographically mature. The chief structural features are three in number:

First, the Cap-au-Gres Fault, which presents the most remarkable disturbance of stratified rocks within the entire state. There is a dislocation of strata and a downthrow of beds to the extent of more than 700 ft. on the western side of this fault, which extends in a direction east 5° south from Dogtown Landing across the southern part of the county, intersecting the Illinois River bluffs below Montezuma.[4] This fault reappears on the north edge of Pere Marquette Park, north of Grafton. See Figs 1 and 2.

Second, the Lincoln Anticline, extending from Grafton (Jersey County) across southern Calhoun County into Lincoln County, Missouri. This fold is paralleled by the Cap-au-Gres Fault.

Third, the Southern Lincoln County Syncline, south of the Cap-au-Gres Fault, which has an east-west axis from Brussels, Ill, into Missouri.

North of the fault axis and continuing beyond the Pike County line, the bedrock at the summit level of the dividing ridge is Burlington limestone. Southward the uplands are directly underlain by St. Louis limestone or the Coal Measures.

The upland region is quite broken, except in the extreme south, and contains productive soils wherever erosion has not been excessive. On the steeper slopes decomposed limestones have modified the above soil somewhat; otherwise considerable

---

4 Data from Illinois State Geological Survey, Bulletin No. 4, Pages 219-238.

Fig. 1

A view of Cap-au-Gres Fault at Dog-town Landing, showing the present almost vertical stratification of the rock layers, including angles of 45-90°. This view was taken just south of the mile-long block of St. Peters sandstone.

Fig. 2

A view of the same fault shown in Fig. 1, but taken at the north edge of Pere Marquette Park. The angle is not so sharp here, though the scenery is more picturesque. Note the contrast between the rock layers and the straight tree trunk.

deposits of drift or loess overlie the stratified rocks and determine the character of the soil. Drift deposits to fifty feet in depth cover nearly the entire upland area north of Batchtown, save over dunuded bluff summits; these deposits consist of brown clays, with some bluish beds containing gravel and boulders. Certain of these clay soils are heavy and hard to work, but fertile where well drained. There is no glacial drift south of Batchtown, but this area is covered with loess, ten to fifty feet thick. (See Fig. 23).

> "Early clays of the loess form the soil and subsoil over a large portion of the uplands, while the bottoms are covered with a sandy loam, similar in character to that of the principal alluvial valleys of the west."[5]

The windblown loess, covering much of the upland area to depths of 40-60 ft., is made up of buff, brown, or ash-colored marly clays, or sandy marls. This loess caps the river bluffs and frequently fills the lateral valleys intersecting the bluffs. Just south of Gilead the bluffs and hills are composed largely of loess. The highest bluffs approach or exceed 800 ft. above sea level and are located from west of Hardin to south of Monterey School on the Illinois River side of the divide. A typical limestone bluff, with its vegetative cover, is shown in Fig. 4. The highest point in the county has an altitude of 810 ft., located about four miles south of Hardin.

The most extensive bottomlands are as follows:

1. Crater Creek south to Diamond Island.
2. Lead Hollow south and east to the junction of the Illinois and Mississippi Rivers.
3. The Pike County border south and east to Daytown.
4. Indian Creek south to West Point Landing.

There are no bottoms in the vicinity of Hardin or Hamburg, and from West Point landing to the southern tip of the County. There are about twenty hollows breaking through the bluff front on the Mississippi side and approximately fifteen on

---

[5] Geological Survey of Illinois, Vol. IV, Page 1.

the Illinois side. The line of bluffs on the Illinois River side breaks up south of Green Bay Hollow. Plate II shows the areas in upland and bottomland, in addition to indicating the drainage divide. The alluvial deposits of the county, composed of river silt and sand, gravel, and clay, are restricted to the bottom lands of the Illinois and Mississippi Rivers. A large portion of the bottom lands of the river forms the only natural prairie land in the county. Most of the bottom lands are dry enough for cultivation and are among the most productive lands in this entire region. Certain sections are swampy and much of the entire area is, at times, subject to overflow. The swampy areas are in the bottoms west and east of Batchtown, east of Brussels, and north of Diamond Island. The elevation of the bottoms varies from 418-430 ft.

Drainage in the upland regions is excellent, though the runoff is excessive. Because of the abrupt slopes throughout much of the upland area, erosion is very active. The loessial soils have a good absorptive capacity and are, therefore, partially resistant to erosion. The short streams have relatively steep gradients in their upper courses, followed by a slow meandering course across the bottoms. As a result, the bottomlands are poorly drained and a large portion becomes flooded during very wet seasons.

FLOODS AND FLOOD CONTROL

The Illinois River Valley encountered destructive floods in 1844, 1904, 1913, 1922, and 1926-7. Grafton, just south of the juncture of the Illinois and Mississippi Rivers, has a low water level of 411 ft. The highest stage of the river gage at Grafton was nearly twenty-six feet on April 30, 1926. The highest stage reached at Pearl, just north of the Pike County line, was twenty-three feet on April 19, 1922.

A brief analysis of precipitation between Pearl and Grafton during flood periods follows:

—DRAINAGE MAP OF CALHOUN COUNTY SHOWING STREAM COURSES, BOTTOM LANDS, AND SWAMPS

(Taken from Soils Report No. 53, page 7.)

PLATE II

Table II---Precipitation During Leading Floods[6]

Date	Rainfall (inches)
Feb. 25 - Apr. 1, 1904	6-7
Mar. 12 - Mar. 26, 1913	5-6
Mar. 10 - Apr. 18, 1922	12-13
Sept. 1 - Oct. 5, 1926	14-21
Mar. 11 - Apr. 22, 1927	12-14

The normal amount of rainfall for each of the months of March, April, and September is approximately 3 inches. The "double-header" flood through the fall of 1926 and the spring of 1927 was without a parallel in this region, as the Illinois was above flood stage at Pearl for 260 days and at Grafton for 92 days during the eleven months from August, 1926 to June, 1927. The total rainfall at Grafton during the above period was over 54 inches with 12 inches of that total falling in September, 1926. This September flood of 1926 was the only one of consequence to occur during any autumn season.

The destructive Mississippi floods to affect the region under study were those of 1881, 1903, and 1920. The Hay Island Levee and Drainage District, the only one in the county, is located in the northwest section, west of Belleview (Plate III). This shows clearly that few overflow areas, save the swamps, are located on the Illinois River side of the county.

Since the completion of the Alton Dam, the Kampsville Dam and Locks are no longer needed, the latter locks having been permanently thrown open since early this summer. (1930). Two other dams and locks are on the Mississippi, one northwest of Belleview, the other in process of construction just north of West Point Ferry. The above dams are an aid to hydro-electric power resources.

---

[6]Data from State Water Survey Division, Circular No. 12.

EARTH RESOURCES

WATER

The two chief bodies of water are the Illinois and Mississippi Rivers, bordering the county. The lower Illinois occupies its pre-glacial channel in the partially filled valley. The mouth of the river is between Grafton and the southeastern tip of Calhoun County, the river itself forming the entire eastern boundary. The Mississippi forms the southern and western borders. The banks of these streams, with their natural levees, are somewhat higher than the surrounding bottom lands. These bottoms contain any number of lakes and ponds.

Calhoun County has thirty-seven lakes; among other counties in Illinois, Macon alone has more lakes. The smallest of these lakes is four acres in area, while the largest one is 214 acres. Their surface elevations show full range from 400-447 ft.

The one outstanding stream is Hay Creek; its source is in Pike County and it enters the Mississippi via the Sny, about three miles north of Hamburg. There are many short creeks descending from the uplands. The short valleys have streams with a steep gradient and ravine-like slopes along their upper courses. Along their lower courses, the gradients are gentle and the bottoms wide, with slopes rising sharply from the bench lands.

Underground water supplies are adequate. A considerable number of springs emanate from the limestone bluffs. Well water is easily obtained in the coves and hollows, as well as along the bottom and bench lands. The rugged topography permits of many small farm reservoirs. There are a considerable number of possible larger reservoir sites, but many of these contain county highways. At present the county does not contain an artificial reservoir.

SOILS

The limestone bedrock has had little to do with the character of the soils, aside from its topographical influence. Since the uplands occupy the greater portion of the county, they will be treated first. These areas have good natural

drainage. The more level uplands have been cleared for orchards, but the steeper slopes have been left wooded. Rock outcrops are frequent. The soils of the uplands are loessial, and quite permeable. See Fig. 23 for a view of one of the numerous loessial bluffs in the county. These bluffs are common in the southwest along the Mississippi, topping the limestone. There appear to have been three distinct deposits of loess. The upland soils, being developed under a forest cover, are deficient in organic matter. There is no clay-pan subsoil. The rugged topography has caused erosion to be extremely active, resulting in a calcareous loess with a friable, permeable profile and a poorly defined subsoil. Slightly more than 90% of the county is subject to erosion of a harmful, serious, or destructive nature.[6] Soil weathering has leached the carbonates from the upper four to eight feet.

The leading soil type from the standpoint of area covered is Eroded Silt Loam, occupying 30% of the total, though relief renders it unsuited to general farming. Much of it is too steep for orcharding and is largely occupied by scrub timber, some of which is used as timber pasture. This type is most conspicuous in the deeply dissected northeast and is largely covered with scrub oak. Eroded Silt Loam predominates throughout the upland area as far south as Dogtown Creek. From here to the southern point it occupies the Mississippi side of the drainage division.

The only other important upland soil type is Bremmish Yellow-Gray Silt Loam. This is considered the best soil for orcharding and general farming. As seen from Plate XXI, it occurs in irregular areas on the divides throughout the uplands and occupies 21% of the total area. On the lower rolling topography of the south it is darker, deeper, and more fertile. This area extends from Beechville through Brussels and Centerville to the Mississippi. Along the creek courses is found a

---

[6] Information Pertaining to Farm, Home, and Community, University of Illinois, Agricultural Experiment Station, 1936, page 11.

Brownish Yellow-Gray Silt Loam over Sand or Gravel, similar to the other type described in this paragraph. It is flat, being developed on the stream terraces.

The bottomland soils are rich sedimentary loams one to four feet thick and largely underlaid with boulder clay. They are very fertile, being excellent for general farming purposes, including the small grains. Three leading types cover 81% of the area of the county; they are Brown Mixed Loam, Deep Brown Silt Loam, and Mixed Loam. (See Plate XII).

The brown Mixed Loam is developed from upland loess, washed down by the creeks, and deposited at the base of the bluffs. It lies above the overflow on what is known as the second bench. The largest areas are north and south of Belleview, south of Raytown, and from Indian Creek to Gilead on the Mississippi side. In the Illinois Bottoms the chief areas are along East Panther Creek, Silver Creek, Crawford Creek, near Michael, south of Mapton, in the vicinity of Brussels, and south and west of Deer Plain. This type is considered the best general farming soil in the entire county.

The Deep Brown Silt Loam does not attain any great depth and is subject to frequent overflow, though it produces fair crops. The greatest single area occupies the northwest corner in the Hay-Hay Creek Area. Other areas are northwest of Bathtown and scattered areas in the Illinois bottoms from south of Lead Hollow to near the southeastern tip of the county.

The Mixed Loam is so subject to overflow that it is not farmed; instead, it is left occupied by bottomland timber. It is found bordering the areas of Deep Brown Silt Loam, as well as covering the islands of the two rivers. The remaining soil types include the clays and swamplands, all of which occupy very small areas, chiefly in the southern half of the county. They are all shown on Plate III.

MINERALS

The mineral resources of the county are non-metallic. The most abundant resource is limestone; good building stone may be obtained from several limestone formations.

> "No county in the state contains a greater variety, or more abundant supply of excellent building stone than this."[8]

The most valuable limestones for building purposes are:

1. Niagara--Hamburg to Cap-au-Gres.
2. Burlington--In the northern part of the county.
3. Hamilton--Between Hardin and Monterey.
4. Trenton--Near Cap-au-Gres.
5. St. Louis--Dogtown Creek to Golden Eagle Ferry.

The Khemmerick, Burlington, and St. Louis formations are available for flux, lime, and agricultural limestone purposes. Any of the above and others make good crushed stone for road work and are adapted to cement manufacture.

Shales are widely distributed and are available for the making of pressed building brick and tile. The St. Peter sandstone bluff between West Point and Dogtown Landings is a very pure, fine, high grade silica. A view of this bluff is shown in Fig. 3.

There are a number of clay resources. Flint clays occur near Belleview and Hardin, occupying depressions in the Burlington limestone. High grade fire clays are associated with these flint clays. The chief clay areas are:

1. Howell Hollow--Two miles northwest of Belleview.
2. DeCerlis Hollow--Three and one-half miles northwest of Hardin.
3. Southern Calhoun County south of Beechville.

The last area contains two seams of coal, one of which is two feet thick and the

---

[8] Ibid, Page 15.

Fig. 8

A view of the St. Peters sandstone bluff (Cap-au-Gres) taken just south of East Point landing. The lower part of the bluff is quite bare throughout its length of one mile on its western face. In the upper left-hand corner, where vegetation is shown, is where exetus (See Fig. 5) thrives. In the right center the bluffs drop sharply to the Mississippi, whose western bank is faintly discernable in the background to the right.

other only nine inches; these are interbined with clay. A typical profile would show:

1. Cap rock
2. A 9 inch coal seam
3. Clay
4. A 2 foot coal seam
5. 5-6 feet of good fire clay
6. More clay
7. 10 feet of blue clay and shale.

The coal is of good quality, but the beds are too thin to be worked alone; the coal may be used as fuel in conjunction with clay working.

VEGETATION

Calhoun County was originally forested on the whole of the uplands and part of the bottoms. The treeless areas are classified as short grass prairies. The forested area is known as sub-climax, as the present timber supply is nearly all second growth. The species are all hardwoods, save for scattered trees of red cedar. The present stands are of seedling origin. In the draws on the slopes toward the high central ridge, the stands are of the oak-hickory type. The upland species still of consequence are the red, white, black, and post oaks, hard maple, elm, hackberry, black walnut, and black cherry. Scrub oak is prominent in the northeast section. The "understory" is composed of red bud, flowering dogbush, and sumac. The grasses of the more open areas include the turkey-foot, panic, blue, and blue stem varieties. An example of upland and bench vegetation is shown in Fig. 4. Cacti, as pictured in Fig. 5, are typical of certain sandy areas, such as the Cap-au-Gres sandstone bluff and parts of the rolling uplands of Point precinct.

The timber varieties on the bench lands are basswood, tulip, hackberry, white elm, swamp white oak, pin oak, bur oak, black walnut, and pecan. The bush vegeta-

Fig. 4

A good example of bench and bluff vegetation. In the foreground is the black-top highway between Hardin and Brussels. At the foot of the bluff are found grasses and thick clumps of young trees and vines--a number of the seedlings are red cedar, the bane of apple orchards. A tin-roofed barn, typical of the region, looms in the left center. The sheer limestone bluff is plainly visible above the lower tree line; this bluff is capped by scattered woodland tree growth, all hardwood, save for scattered red cedars.

Fig. 8

Cactus vegetation, common on the sandstone between West Point and Dogtown Landings, and in the southern part of the county. Wherever found, this particular type of plant grows in thick, closely matted clumps.

tion of the bench lands is chiefly hawthorn, prairie crabapple, and sumac; blackberries and raspberries are prominent along the base of the bluffs. The grasses are those of the uplands. In the bottoms are found the water locust, honey locust, white elm, red elm, pin oak, bur oak, soft maple, ash, cottonwood, river birch, willow, hackberry, basswood, black walnut, sycamore, and pecan trees. The "understory" consists of swamp privet, holly, buttonbush, poison ivy, grapevines, and vines. The grasses are rice-cut, water millet, sedge, and sedges (Carex.) The uncultivated bottoms are a jungle of trees, shrubs, and vines, in addition to water grasses and swamp vegetation.

FAUNA

Animals formerly numerous in the county were the bay lynx, beaver, black bear, buffalo, otter, puma, timber wolf, Virginia deer, and Wapiti. Present day game animals include the cottontail, coon, opossum, and skunk; these animals are found everywhere. The coyote is very scattered. The fox squirrel frequently is found in the thinner timber, prairie, and upland, while the grey squirrel prefers the heavy lowland timber. The red fox is common in the open areas, but his grey brother has his habitat along the bluffs. Mink are found along the streams, while the muskrat is at home in the marshy areas. The weasel inhabits the upland areas.

The game birds include the quail, mourning dove, ducks, and geese. The Wood Duck is the leading nesting duck; others are the Mallard and the Blue Winged Teal. In the fall and spring the following ducks gather in great numbers: Mallard, Pin-Tail, and Lesser Scaup; others are the Bald Pate, Ring Necked, and Teals. The abundant vegetation furnishes an excellent cover for wild life and makes possible very good hunting. There are over 6,000 birds per square mile of orchard land, the more common species being the English sparrow, bluebird, brown thrasher, mourning dove, robin, blue jay, flicker, catbird, mocking bird, and field sparrow. The most abundant varieties of summerland birds in the more open country include the English sparrow, eastbird, meadow lark, blackbird, mourning dove, dickcissel, red-winged blackbird, prairie horned lark, flicker, robin, brown thrasher, red-headed

woodpecker, and crow.

Across from Pere Marquette State Park and just to the east of Deer Plain there is being established by the Natural History Survey, in conjunction with the National Park Service, a 2000 acre tract as an "Experimental Wild Life Research Area and Water Fowl Refuge." A trap fringe is being built on the levee. When completed, this refuge will have a boat canal and trails. A watch tower and laboratory are also to be maintained.

Fig. 6

Fig. 7

Fig. 6 A log cabin set on the creek terrace at the foot of a wooded hill. The logs were hewn of oak found in the vicinity. Note the home-made picket fence. This photo was taken on the road west from north of Michael to Hamburg.

Fig. 7 A home in the south end of Kempsville, with a high bluff for a background. This type of house is quite common throughout the entire county, both in the villages and on the farms.

CULTURAL FEATURES

POPULATION

The total population according to the 1930 Census numbered 8,034, a loss of 811 from the 1920 total. There were 4,306 males and 3,728 females. No Negroes live in the county and only 198 are foreign born. The latter have decreased steadily from 6.9% of the total population in 1900 to 1.6% in 1930. Of the foreign born, 61% were Germans. From 1870 to 1920, inclusive, Germans made up 70-75% of the total foreign born population. Since 1870 the Germans, Irish, and Swiss have been the leading nationalities among the foreign born and together have made up 80% or more of the total. Other prominent nationalities have been the French and English.

Of the total population, only 2.8% were illiterate; this compares favorably with the 3.4% of the entire state. Persons engaged in gainful occupations included 2,018 in agriculture, 148 in transport and communication, 181 in wholesale and retail trade, 89 in forestry and fishing, 85 in professional services, and 80 in the building industry.

The entire population is listed as rural, since there is not one large settlement in the county. The population density per square mile of total area is only 26.5 persons, as compared with 134 for Illinois and 42 for the nation. The farm population was 5,457 in 1930, but increased to 5,838 by 1935. There are only five incorporated villages and a number of unincorporated hamlets. Hardin, the county seat, has a population of approximately 750. Kampsville is second in size with 400, while Batchtown, Brussels, and Hamburg each have between 250 and 300. All the incorporated communities together approximate 2,000 persons. See Plate IV for Settlement Grouping.

HOUSES AND SETTLEMENTS

While touring the county, a number of distinctive house types were in evidence, as shown in Figs. 6 to 9. Scattered throughout the uplands are a number of log cabins constructed of natural oak. They make fairly comfortable living quarters.

SOUTH SHEET

LEGEND

- 5 Eroded Silt Loam
- 18 Brownish Yellow-Gray Silt Loam
- 134 Brownish Yellow-Gray Silt Loam Over Sand or Gravel
- 67 Brown Sandy Loam On Sand or Gravel
- 81 Brown Silt Loam Over Sand or Gravel
- 37 Light Brown Fine Sandy Loam
- 109 Deep Black Clay Loam
- 69 Black Clay
- 33 Drab Clay Loam
- 71 Drab Clay
- 73 Brown Mixed Loam
- 74 Mixed Sandy Loam
- 77 Deep Brown Silt Loam
- 142 Mixed Loam (Overflow)

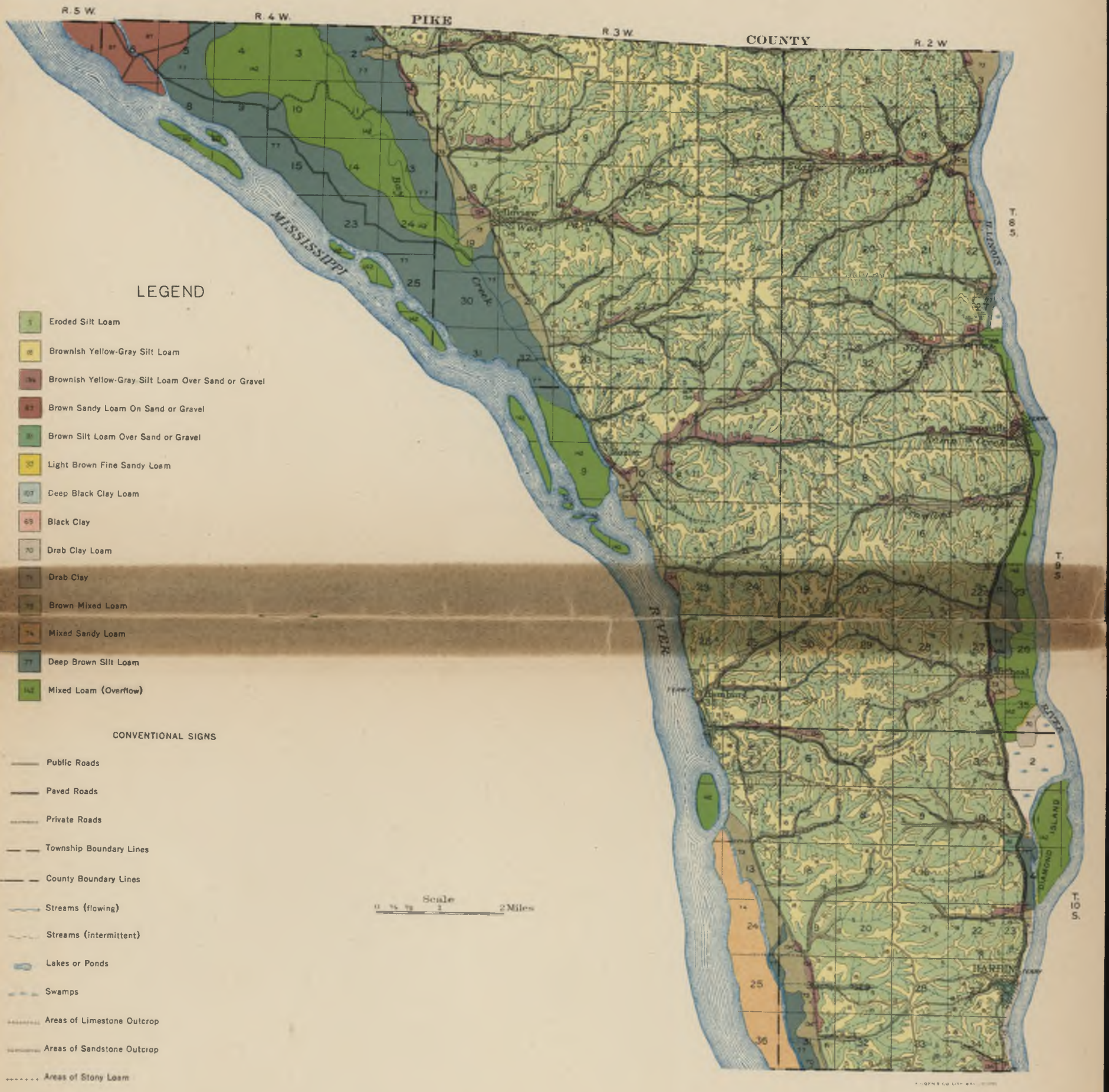
CONVENTIONAL SIGNS

- Public Roads
- Paved Roads
- Private Roads
- Township Boundary Lines
- County Boundary Lines
- Streams (flowing)
- Streams (intermittent)
- Lakes or Ponds
- Swamps
- Areas of Limestone Outcrop
- Areas of Sandstone Outcrop
- Areas of Stony Loam

SOIL SURVEY MAP OF CALHOUN COUNTY

UNIVERSITY OF ILLINOIS AGRICULTURAL EXPERIMENT STATION

NORTH SHEET



LEGEND

- Eroded Silt Loam
- Brownish Yellow-Gray Silt Loam
- Brownish Yellow-Gray Silt Loam Over Sand or Gravel
- Brown Sandy Loam On Sand or Gravel
- Brown Silt Loam Over Sand or Gravel
- Light Brown Fine Sandy Loam
- Deep Black Clay Loam
- Black Clay
- Drab Clay Loam
- Drab Clay
- Brown Mixed Loam
- Mixed Sandy Loam
- Deep Brown Silt Loam
- Mixed Loam (Overflow)

CONVENTIONAL SIGNS

- Public Roads
- Paved Roads
- Private Roads
- Township Boundary Lines
- County Boundary Lines
- Streams (flowing)
- Streams (intermittent)
- Lakes or Ponds
- Swamps
- Areas of Limestone Outcrop
- Areas of Sandstone Outcrop
- Areas of Stony Loam

PLATE III

SOIL SURVEY MAP OF CALHOUN COUNTY

UNIVERSITY OF ILLINOIS AGRICULTURAL EXPERIMENT STATION

POPULATION DISTRIBUTION

Calhoun County Precincts

(From Calhoun County Farm Bureau)

1 dot = 40 persons

Scale: 1 inch = 4 miles

PLATE IV

Fig. 8

Fig. 9

Fig. 8—A modified type house related to the southern type shown in Fig. 9. A dinner bell is placed atop the second floor porch.

Fig. 9—A barn built by the owner (Owner B referred to later) of native woods. This barn is ideally arranged in compartments on the inside. Some of the barns have a more steeply sloping hip-roof.

Another type, illustrated in Figs. 7 and 8, is of a modified southern colonial design with a porch at the level of both floors, extending either over the front entrance or over the entire length of the front. These are found in the villages, along the bluffs, and in the leading upland hollows. This design is probably the most prominent one in the county. The barns are either hip-roofed or the old conventional design. The remaining house types are those common throughout the state.

The great majority of the farm buildings and homes are located along the leading dirt roads and improved highways. The leading sites follow:
First, the gentler slopes at the foot of the bluffs;
Second, the creek terraces along the hollows;
Third, second bench land between the true bottoms and the foot of the bluffs;
Fourth, the main limestone ridge, running roughly north and south through the center of the uplands. There are a few homes located on the higher land of the bottoms, where overflows are not too prevalent, but mosquitoes and stagnant water are discouraging factors during the warm months. There is little room for building along the eroded steeper upper slopes of the uplands, but the terraces and bench land furnish relatively level land or gentle slopes for building purposes. The main divide is also good for building, save that it is more exposed to winter weather than the areas along the bluffs or in the hollows. Many groups of farm buildings immediately border the roadway, but a considerable number are located one to two city blocks back from the main highway. The main reasons for the latter appear to be first, to locate on a slightly higher elevation and second, to receive the protection of the bluffs and hills.

The chief villages and settlements are located on second bench land at the foot of the bluffs, usually where the hollow breaks the regularity of the bluff line without any consequential intervening bottomland. These are focal points for collecting products to be shipped or trucked out and for distributing incoming goods. In the southern part of the county, where there is less erosion and the

land becomes more rolling, are found a number of settlements located on the Brownish Yellow-Gray Silt Loam hills; Plate III confirms this point. Brussels is located at an elevation of less than 500 ft. in the vicinity of fairly extensive fertile bench land of loam soils, as well as being situated in the heart of the better silt loam upland soils of this area. Batchtown is nestled among the low hills west of the main divide, about 9 miles northwest of Brussels. It is the only incorporated village in the county above the 500 ft. level, being located approximately 600 ft. above the level of the sea. Like Brussels, it is centered in an area containing considerable silt loam. No settlement of consequence is found in the bottoms of either river, because of health and overflow considerations. Hamburg, Kampsville, and Hardin are all located near points where the base of the bluffs approach the river banks. These points were early river landings and ferries operated at all three places, though the one at Hardin has been replaced by a bridge. Not a village is situated at any point along the exposed watershed, though there is ample room in some sections. All of the above incorporated settlements, except Hardin, have only one main thoroughfare.

Hardin, the county seat, is located chiefly at the foot of the bluffs, on second bench land--high enough above the river never to be flooded. See Fig. 10 for a view of Hardin and the Illinois River, looking south. There are two important business streets running north and south, with a third business street crossing the other two. The county court house is a small, two-story, brick building with an outside stairway. There is a vine-covered jail eighty to ninety years old. There are two county newspaper offices (the only ones in the county), two hotels, and the Farm Bureau Building. There are several restaurants, usually in connection with some other establishment. All outgoing mail in the county is collected at the Hardin post office, from where it is trucked to Carlinville in Macoupin County, to be sent by train. (The four attorneys in the county all live at Hardin.)

Fig. 10

View of Hazlin, the county seat, looking south. The street in the center foreground is the southern terminus of Route 100. In the left center background can be seen Hartland Island. This village is located on second bench land with the uplands rising immediately to the north, west, and south.

FEATURES OF PRODUCTION

AGRICULTURAL

INTRODUCTORY SURVEY

Calhoun County is at present almost entirely agricultural. The entire population, 8,084 in 1930, was classed as rural, with 5,457 living on farms. The total farm population increased from 5,870 in 1925 to 5,832 in 1935. The total land and water area of the county is 281.57 square miles, but the land is less than 260 square miles, or approximately 165,800 acres, 150,000 or 91.8% of which was in farms in 1935. Crop land in 1937 was 60,000 acres or 36% of the total land area. The crop land harvested in 1934 was approximately 50,700 acres, while 10,800 acres remained fallow. There were nearly 60,000 acres of pastured and unpastured woodland. Additional pasture land totalled 15,000 acres.

The total number of farms decreased steadily from 1,119 in 1920 to 1,084 in 1930. The depression years increased the number to 1, 159 in 1935. The Calhoun County Farm Bureau estimates 1,300 farms today, 886 of which are registered members of the Bureau. The proportion of tenancy has decreased from 32.4% in 1920 to 28.8% of the farms in 1935; Tenancy throughout the state in the latter year averaged 44.8% of the farms. There are 805 farms owned entirely or in part. The average size of farms in this region was 131.6 acres in 1935, compared with a state average of 136.9 acres. The following table shows the number of farms of various sizes:

Table XII—Size of Farms[9]

No. Farms	Acreage
[illegible]	[illegible]
319	50-99
294	20-49
179	175-259
142	260-499
98	3-19
80	500-999
14	over 1,000
3	

[9] Agricultural Census of the United States for 1935.

From the above table it will be seen that the majority (53.6%) of the farms are in the 50-99 and 100-174 acre groups. Since the World War there have been no more than three farms in excess of 1,000 acres.

Farm values have dropped decidedly since the war; in 1920 the value of all farm land and buildings was $35,560,000, while in 1930 the value was only $7,660,000. The value per farm during the same period decreased from $15,000 to $6,700 with a consequent decrease in value per acre from $78 to $21. The average valuation for the entire state was $70 per acre in 1935. According to Mr. Metcalfe of the Federal Farm Loan Association, the following values prevail at present (1936):

Table IV--Average Values of Farm Land

Type	Value per Acre
Good bench land	$100
Good bottomland	75
Rolling upland of the south	75
Bottomland overflowed 1 year in 4	50
Orchard upland	50-65
Erosive upland	10

Only the best bench land rates $100 per acre and there is little of that in the county--at most, less than 10%. Orchard upland is available to any purchaser willing to buy. It is apropos to mention that about 50% of the farms are mortgaged. Not more than $5,000 can be borrowed from the Federal Farm Loan Association on 160 acres, with good improvements and 40 acres in bearing orchard.

The value of all field and orchard crops, vegetables, and farm garden produce in the county reached $4,051,000 in 1919 and $1,516,000 in 1929. Of the former total, 45% consisted of fruits and nuts, while cereals amounted to 43%; in the 1929 total, 61% consisted of fruit and nuts, while cereals accounted for only 26%. The value of fruits and nuts in 1919 was 12.8% of the state total and in 1929 it was 10.4%; Union County ranked second in the latter year with 10% of the state value. One can see in the above figures the importance of cereals during the "war years." In 1929 all livestock was valued at $900,000 and livestock products tot-

sled $300,000.

The three chief types of farms are Fruit, General, and Animal Specialty; these three types comprised 72% of all farms in 1930. Fruit farms embraced 16% of the number and 22% of the acreage of all fruit farms in the state. There were 382 fruit farms, while Marion County with 320 ranked second. Calhoun County ranked last in dairy farms with only four. There was less tenancy on fruit farms than any other type, 70% of the total number being farmed by the owners. Over 70% of all crop land harvested was on Fruit and General farms. Fruit farms averaged 147 acres each, there being a greater number of large fruit farms then in any other county. Farm expenditures for feed, fertilizer, and labor were more than three times as great on fruit farms as on any other type. The value of all farm products sold in 1929 from all types of farms was $2,019,000; the products sold from fruit farms alone were valued at $1,037,000 or 51% of the total.

ORCHARDING

APPLES

HISTORIC ORIGINS

Ebenezer Smith probably set out the first seedling apple trees in the county shortly after 1829. Apple culture does not seem to have acquired much prominence, however, until the Germans and French settlers came in from St. Louis, via the Mississippi and Illinois Rivers. These immigrants poured into the United States following the political revolutions in Europe just prior to 1850. They brought with them their knowledge of orcharding as practiced in France and the German states.

Commercial apple production was to all appearances negligible until after the Civil War. About 1875 Hermann Schulze made the first apple tree transaction and started the Schulze Brothers Nursery, which is still operating as the only important nursery in the county; this nursery is located several miles southeast of Prairie du Rocher on the main highway to Deer Plain.[10]

---

[10] Most of the information in this paragraph was received from Albert Schulze, present head of the Schulze Brothers Nursery.

The first variety produced was Hall's Genitan. Other varieties at this time were Northern Spy, Tolman Sweet, Winter Sweet, Russet, Summer Queen, Yellow Bellflower, Winesap, Pryor's Red, Seek-No Further, Smokehouse, Rhode Orange, Maiden Blush, Rambo, and Early Harvest. Because a number of these varieties did not keep well in storage, Schulze and Jacob Auer successfully experimented with certain new varieties, as Ben Davis, Jonathan, Grimes Golden, and Willow Twig. Some of the apples were originally sent to Germany. About 1885 Auer, Mattes, and Judge Hamilton sprayed their apple trees for the first time. Martin Williams came from the east and settled near Fruitland (now Golden Eagle) and set out the first peach and cherry orchards. Williams grew his own trees, but steamer transport proved too slow in getting cherry and peach produce to markets. After the turn of the century, Calhoun County became known as the "Apple Kingdom."

There was a number of reasons why orchards were planted, and why they have thrived:

First, people entering the county knew something about orchard culture, especially the French and German immigrants.

Second, most of the county is a dissected upland region subject to erosion and largely unsuited to ordinary general farming methods; trees and grass on the slopes and ridges were the only means of coping successfully with erosion.

Third, except in the extreme south, the upland soils are only moderately fertile, but have a very permeable subsoil, so that trees can take deep root.

Fourth, the uplands particularly have excellent air drainage, as well as water drainage on the slopes.

Fifth, the limestone base, and the relatively high percentage of sunshine in the summer months help to produce a highly colored apple of good quality.

SUITABLE AREAS

As stated previously, Brown Hammond loam is the most fertile soil in the county, but lacks the air drainage necessary for apples. Practically all commercial orch-

ards of importance are located in the upland sector, save for a few surrounding Deer Plain on the better bench and bottom soils. An example of a fine lowland orchard at the foot of extensive upland orchard land is shown in Fig. 11. The soils about Deer Plain are chiefly loams with some clay. Both air and water drainage is poor. Most orchards are located on the more level or rolling uplands of the central and southern parts of the county. Some of the steeper slopes breaking from the upland are also in orchard, but are chiefly in woodland pasture or are left wooded. The chief lowlined areas, as can be seen from Plate V, are:

North and east of Hamburg,
North, west, and south of Hardin,
Surrounding Dutchtown, and
The southern tip from Brussels to Golden Eagle.

Most of the above sections have considerable areas of Brownish Yellow-Gray Silt Loam, the better of the two prominent upland soils. Many of these orchards also encroach on the poorer Eroded Silt Loam, but erosive influences cause the latter soil type to be left largely in some sort of wooded state. Air drainage in the uplands is excellent, allowing the orchards to avoid the late frosts of the lowland areas. The uplands also have the limestone base and a maximum of sunshine to impart quality and color to the fruit. Hill fruit has more sugar content and keeps better than the lowland product. There being no impermeable clay subsoil under the loess, the trees can take deep root, besides having the advantage of rapid water drainage.

MECHANICS OF ORCHARDING

When a young orchard is started, the trees are set out about two rods apart, allowing approximately 40 trees to the acre. Intercropping is a common practice, especially until the trees become of bearing age; corn (as shown in Fig. 12), clover, and other legumes are generally used for this purpose. Most of the mature orchards have a blue grass sod between the trees, though some have legumes or weeds. Pruning is done by practically all orchardists. Cultivating and disking are also practiced regularly. Because of leaching in the topsoils of the slopes, the use of fertilizer produces excellent results, though the practice is slow in

Fig. 11

A lowland orchard north of Hamburg. In the middle background at the edge of the orchard is the highway leading north to Bellevieu--this highway is at present being reconstructed and relocated. Beyond the road is the heavy lowland timber of the Mississippi bottoms. In the distant background are the bluffs on the Missouri side of the river. This photo was taken looking down from the edge of an upland orchard.

Fig. 12

A typical view of intercropping with corn in a young non-bearing orchard. The road in the foreground is one of the common rough clay-gravel roads so common and not well maintained. This orchard and road are on the main limestone ridge, southwest of Kempsville.

being utilized by Calhoun County orchardists.

The prevalence of diseases and insect pests calls for an elaborate spray schedule. Leading growers spray on an average of six to eight times per year; if conditions are bad, ten to twelve sprays may be needed. The leading insects to be combated are the codling moth, San Jose and other scales, aphids, leaf hopper and leaf roller. The leaf roller was very destructive to the 1936 apple crop. (After rolling up in the leaf, it cannot be affected by spraying.) The most prominent fungi are apple scab, apple blotch, and bitter rot. The red cedar is a carrier of cedar apple rust, which damages apples considerably. The leading sprays for the above are the dormant sprays, pre-pink spray, cluster bud spray, calyx spray, four to five cover sprays, and possibly one to three second-brood sprays. The water supply for spraying is usually adequate and is obtained from wells, springs, or village water supplies. There was a water shortage during the summer drouth of 1936. Reservoirs could be constructed to prevent a recurrence of the latter condition.[11] Better orchard sanitation, aside from spraying, would aid in reducing insect and fungus damage. The heavy crop of 1936 did considerable damage to many of the older trees.

BEARING AGES

Young trees begin bearing when seven to ten years old, but are not considered commercially important until the tenth year. The best bearing years are the ages ten to twenty-four, though some trees bear well until thirty-five years old. Young trees should be planted to replace trees over thirty years of age, in order to maintain production. Approximately 70% of these are ten years of age or older. About 70% of all the trees are late fall and winter varieties. Of the trees, less

---

[11] Complete information on spraying may be obtained in Circular 447 of the Illinois College of Agriculture.

them ten years of age, only about 10% are summer varieties. An important point is that only 30% of the Golden Delicious, one of the finest eating apples, are ten or more years old. See Table V. for exact data.

ORCHARD EXPENDITURES

Orcharding is an expensive proposition. Preharvest expenses on good orchards average about $85 per acre. Included are the materials, later, and power for spraying, banding, fertilizer, pruning, mowing, and disking. The costs for harvesting include picking, washing, grading, and packing (including materials). If the grower does not have a packing shed, trucking and custom packing expenses must be added. During "bumper" crop years storage expenses increase the costs. The above expenditures added together total $0.65-$0.80 per bushel, if sold immediately. If storage expenses are added, the costs range from $0.75-$1.15. Cooperative marketing would help considerably in reducing costs for the apple grower.

VARIETIES[13]

There are at least sixteen varieties of apples, each with a total of over 10,000 trees. The total number of trees is almost 800,000, of which 45% are Jonathan and Willow Twig. Red Delicious and Winesap each make up nearly 10%. Other important varieties are Golden Delicious and Grimes Golden. Lesser varieties are York, Black Twig, Rome Beauty, Gano, Ben Davis, Champion, Stayman, and King David. The above thirteen varieties are all classed as early or late winter apples. The Wealthy, Transparent, and Duchess are the leading summer kinds. Refer to Table V. for exact data.

ORCHARD ACREAGE

There were 820 apple growers in 1937, with a total acreage in orchards of 21,364. This makes an average of 25.8 acres per grower. 30% of the entire crop-

---

[13] Data from an Orchard Survey of Calhoun County, July, 1937, Published by the Calhoun County Farm Bureau.

APPROXIMATE LOCATION AND EXTENT OF COMMERCIAL APPLE ORCHARDS
IN CALHOUN COUNTY, 1936

From Mumford and Debker, Miscellaneous Report No. 13.

PLATE V.

ORCHARD SURVEY OF CALHOUN COUNTY[12]

Varieties of Trees	Age of Trees			Total	Percent Total	% B	% NB
	20 Yrs. or over	10 to 20 yrs.	Under 10 yrs.				
Jonathan	36,643	103,925	49,059	189,627	25.8%	74	26
Willows	15,021	92,439	31,942	139,402	19.6%	77	23
R. Delicious	10,061	42,718	25,014	77,793	9.8%	68	32
Winesap	13,018	52,933	9,810	75,767	9.6%	87	13
G. Delicious	1,136	14,933	32,685	56,762	6.9%	29	71
Grimes	4,409	24,334	3,528	32,271	4.1%	89	11
York	3,663	13,747	3,100	10,510	2.3%	89	11
R. Elk. Twig	3,849	13,298	1,466	17,613	2.2%	92	8
Rome Beauty	889	6,414	8,098	15,401	1.9%	47	53
Cano	3,165	10,036	973	14,173	1.8%	93	7
Ben Davis	3,508	7,485	3,035	13,996	1.8%	64	16
Champion	2,139	7,483	3,156	12,778	1.6%	75	25
Stayman	2,321	5,575	2,918	10,674	1.4%	73	27
King David	1,143	5,075	136	6,354	.8%	96	2
Transparent				23,595	3.0%		
Duchess				13,310	1.6%		
Wealthy				34,296	4.4%		
Others				45,965	5.5%		
	130,010	399,180	178,926				

Table V

*B = Bearing Trees NB = Non-Bearing Trees in Percents

93.6% of apple trees 10 years of age or older.
86.5% of apple trees under 10 years of age

---

[12] County Summary, Orchard Survey of Calhoun County, Calhoun County Farm Bureau, 1937.

pod area of the county is in orchard. A precinct survey is found below:

Table VI - Growers and Acreage by Precincts.[14]

Precinct	No. Growers	Orchard Acreage
Point	126	5,183
Hamburg	139	4,386
Hardin	91	3,173
Richwoods	151	2,461
Otland	71	2,091
Crater	73	1,838
Belleview	108	1,626
Curtin	85	689

Checking with Plates III and V, one finds Point precinct leading in number of orchards and acreage; it is here we find the richer, more rolling upland of the southern tip of the county. Hamburg has the largest acreage per grower (32). Hardin, Richwoods (around Batchtown), and Otland are the other precincts with better than 2,000 acres each. Over 100 growers in Belleview precinct average only nineteen acres each. Curtin precinct is located in the infertile, dissected northeastern corner, where the steep slopes are largely left in scrub oak. Orchards range in size from a few acres to over 100 acres. One grower controls over 500 acres in Calhoun County, in addition to orchard land near Crafton.

Practically all orchardists do a little general farming. A number of them raise beef stock, and most of them raise chickens and hogs. Most important apple growers have 30-60% of their cropped area in orchard. A good average acreage in orchard is 30% of the cultivated area.[15] Cereals and forage crops are raised on the floor and lower slopes of the hollows or between the rows of trees in young non-bearing orchards. (See Fig. 13). The stock is grazed in open woodland pastures on the steeper slopes. (Fig 14.)

Most of these apple growers are not novices in this particular agricultural pursuit. According to one study, Calhoun orchardists have averaged better than

---

[14] Data from Calhoun County Farm Bureau.

[15] Data from An Economic Study of Some Problems of Western Illinois Apple Growers, Mumford & Decker, 1927, Table 10, Page 20, Miscellaneous Report No. 13.

Fig. 13

A characteristic panorama of the rolling upland which typifies Point precinct. This view was taken from a hilltop along the highway between Brussels and Golden Eagle. In the foreground is a young bearing orchard, with hay for intercropping. Beyond the edge of the orchard and occupying the lower part of the vale are the cornfields. On the opposite slope to the left is an older orchard, where some trees have died out. To the right is a woodland area with considerable undergrowth. In the central background are found open pasture and woodland interspersed with one another.

Fig. 14

A group of registered Herefords in a barn lot north of Hamburg. In the background may be seen the hilly open woodland pasture, behind which is the more heavily timbered area. Note the apple tree on the left, with the apples still on the tree.

twenty years, most of this time having been spent on the same farm.[16]

The "royal houses" of the "Apple Kingdom" are the Lougheed and Ringhausen families. These two groups control large areas of orchard land. A brief survey of three important growers is given below.

Grower A owns a total of 120 acres just north of Batchtown, sixty-five of which are in orchard. Only eight acres are non-bearing. Most of the orchard was set out in 1919, the leading varieties being Jonathan, Willow Twig, Red Delicious, and Golden Delicious. There are also several other varieties. This grower has his own packing shed and sells his crop to a syndicate. He uses red clover for intercropping. During picking seasons six or seven pickers are hired. The beautiful house on this place was built prior to the Civil War.

Grower B owns 320 acres a few miles north of Hamburg. There are seventy-five acres in orchard, with 8,000 bearing trees. Nitrate of Soda and manure are used as fertilizers. Scattered timber occupies forty acres. The land was purchased for a little more than $75 per acre. This grower has his own packing shed, including a grader and washer. A total of 500-700 bushels can be graded and packed each day. Pickers can pick forty to sixty bushels per day from old trees and up to 100 bushels from young trees. All trees were purchased from Stark Brothers Nurseries at Louisiana, Missouri. (Stark Brothers are the originators of the Golden Delicious apple.) The summer varieties are Transparent, Strawberry, and Wealthy; the early winter varieties are Jonathan, Red and Golden Delicious, and Starking. The late winter varieties are York, Gano, and Willow Twig. Owner B maintains several varieties of experimental orchard plots in cooperation with the Agricultural Experiment Station at the University of Illinois. There are three or four men employed steadily, though twenty pickers are required during picking seasons. For packing purposes six or seven women are employed. Grower B estimates a cost of at least $0.50 to grow and harvest each bushel of apples. This farm also carries seventy-

---

[16] Ibid., Table I, page 8.

five head of pure bred registered Herefords. This farm is shown in Figs. 8, 9, 10, 14.

Grower G is located east of Hamburg and has a total of 160 acres, eighty of which are in orchard. The leading varieties are Jonathan and Willow Twig. There are 3,000 trees ten to thirty-five years old and all bearing. Corn and clover are rotated on 80 acres. Some fertilizer is used. The chief feature of this orchard is the one and only stationary spray plant in the county. It uses water pressure and is motor driven. The spray mixture is piped throughout the orchard, there being an outlet for every 4 trees. This grower also grows and feeds fifty to sixty registered Herefords.

HARVESTING

Harvesting methods have changed considerably in recent years. At the height of the steamboat era, pickers piled apples in ricks in the orchard, from where the packers picked them up and placed them in barrels. Today, pickers place the apples in bags, emptying the latter either upon sorting tables or placing them in field crates to be hauled to the packing shed. A number of growers have their own packing sheds with mechanical graders for washing and grading. The apples then are packed into bushel basket containers. Most growers haul their crop in bulk or field crates to commercial packing houses. The leading ones are the Batchtown-Tyler and August Frambe sheds at Batchtown, William Kemp's at Kampsville, the Springfield Produce Company's shed at Hardin, and the three houses at East Hardin across the Illinois River--the Truam-Kunes (shown in Fig. 15), Frank Leesmeah, and Farm Bureau Exchange sheds. Much custom packing takes place at the latter shed, where there is a tunnel washer and grader capable of handling 400 bushels per hour. When running at full speed, seventy employees are needed, though only thirty-five to forty were used at any time during the 1938 season. Growers take their apples to the Farm Bureau in Hardin to have them tested for spray residue. Apples sold out of the state must be washed in solution to removed residue spray materials.

Fig. 13

One of the three apple sheds located at East Hardin, with a refrigerator car in front waiting to be loaded with apples. This is the Truax-Traer and Wagner shed.

MARKETING

There are several methods of marketing apples. They were originally barrelled by buyers, who bought the entire crop on the tree. Most of these buyers were from St. Louis, Chicago, Pittsburg, and St. Paul. These dealers took all responsibility for the crop from the time the deal was closed. There is today little purchasing of entire crops on the tree, the practice being on the verge of disappearing. Apples are largely sold by consignment, at the packing sheds, and at the orchard to truckers and others. Trucker-buyers are becoming more numerous each year. They purchase apples for their own market, the city wholesale market, sales to retailers, the St. Louis retail stand, direct sales to consumers, institutions, and for making cider. Over 80% of the apples trucked out by the above are culls, unclassified or orchard run apples in bulk, with 15% classified as U. S. No. 1.[17]

The sales areas for which most of the truckloads are destined include the cities of St. Louis, Chicago, and the states of Missouri, Illinois, and Iowa. Truckers and commission houses purchase approximately 80% of each year's crop. Cider mills average 10% of each crop. Some are placed in storage and later sold to wholesalers. The remainder of the apples are shipped by rail from East Hardin. In 1928 boats accounted for 6% of the crop, while 1930 was the last year any apples moved by boat.[18] Freight shipments of apples are per 100 pounds with the bulk of the shipments billed to Chicago, Milwaukee, Minneapolis, Winnepeg, Appleton Jc., (Wisconsin), Cedar Rapids, (Iowa), and Omaha. The majority of the apples are shipped in refrigerator cars, save the cider apples, which are shipped in bulk. These cider apples are destined for the Central City Pickling Co., located at Peoria, Illinois.

---

[17] Marketing the 1927 Crop of Fall and Winter Apples in Western Illinois, Ekstrom, 1928, Fig. 7, page 44.

[18] Mumford and Dooher, op. cit., page 28.

Apples for marketing are inspected and graded according to U. S. standards. The leading grades are U. S. Fancy, U. S. No. 1, U. S. Commercial, U. S. No. 2, and U. S. Unclassified, with the bulk being Unclassified, No. 1, and No. 2.[19] Highly colored apples bring a better price than those not so well colored. For coloring, hot days and cool nights are needed during the ripening period between late August and October.

PRODUCTION AND MARKETING STATISTICS

Calhoun County leads all other counties in the state by a considerable margin in the matter of commercial apple production. Annual statistics prior to 1922 are not available. Since that time the state production has averaged 5,284,000 bushels, while Calhoun County has averaged 1,847,000 bushels.[20] During the latter period Calhoun County has produced better than 35% of the total production in the state. From 1920-1926 the average amounted to 36% of the state total. Over the three year stretch 1932-34, this region produced 33% of the state's apples. In 1899 Calhoun County produced only 1% of the Illinois production and ten years later produced only 3% of the state total.[21] Since 1922 it has never produced less than 14% of the total state production. The Calhoun County totals are significant in view of the fact that in 1925 the county contained only 10% of the trees of bearing age in the entire state.[22] The state had nearly 4,000,000 trees of bear-

---

[19] Agricultural Experimental Station at the University of Illinois, Bulletin No. 318, Table 6, page 370.

[20] Data from Illinois Crop and Live Stock Statistics & A. J. Surratt, Agricultural Statistician, Illinois Department of Agriculture. *State totals and Calhoun County percentages in this paragraph do not agree with certain other published data, but the statistics prior to 1922 were received from the office of A. J. Surratt, and the percentages derived therefrom.

[21] U. S. Census--1920 & 1930.

[22] Agricultural Census of the U. S. for 1925.

ing age, of which total Calhoun County had just over 600,000.

In 1928 boats transported 67% of the crop, but in 1935 the Hardin Bridge had 60% of the apple crop transported over it.[23] Some of the latter were transferred to rail facilities at East Hardin, while others continued by truck. Ferries accounted for 33% of the crop. Nearly 60% of the 1935 apple crop was sold to commission brokers, wholesale buyers in the producing area, truckers, and cider mills.[24] No apples move by boat today, but are transported by truck and rail. The peak year for apple shipments by rail was 1932, when 884 car loads were billed from East Hardin.[25] A car load averages roughly 800 bushels. Car load shipments since 1928 were as follows:

Table IX—Apple Shipments by Rail from East Hardin

Year	No. of Cars
1928	806
1929	868
1937	606
1938	128

The distinct drop in 1938 was caused by the third poorest apple crop since 1910. Of the 606 cars shipped in 1937, 112 were filled with cider apples billed to the Central City Pickle Co. of Peoria, Illinois.

TRENDS

Calhoun County, as well as the state, has shown marked fluctuations from year to year in apple production. (Fig. 16). Two factors largely determine the size and quality of the apple crop—climate and insects; the effect of the latter is partially determined by the climate; spraying and orchard sanitation must care for the insects, but little or nothing can be done about the weather. Some weather effects

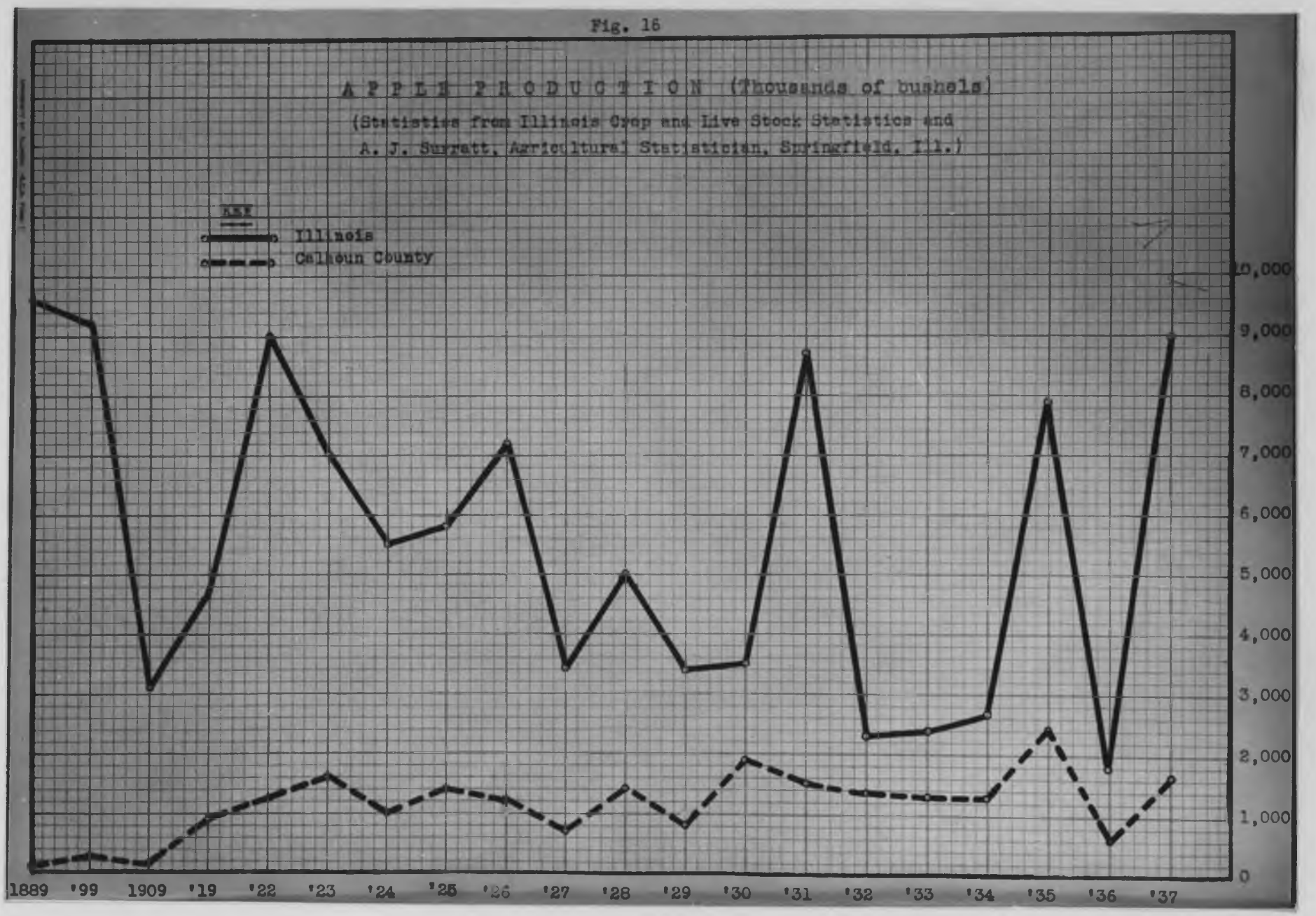
---

[23] Rumford and Decker, op. cit.

[24] Ibid.

[25] Rail shipment data from Station Agent at East Hardin.

Fig. 16


APPLE PRODUCTION (Thousands of bushels)
(Statistics from Illinois Crop and Live Stock Statistics and
A. J. Surratt, Agricultural Statistician, Springfield, Ill.)
KEY
Illinois
Calhoun County
10,000
9,000
8,000
7,000
6,000
5,000
4,000
3,000
2,000
1,000
0
1889
'99
1909
'19
'22
'23
'24
'25
'26
'27
'28
'29
'30
'31
'32
'33
'34
'35
'36
'37

during recent years are apropos. In 1930 the apple crop was short due to unfavorable weather in April and May, featuring light frosts and cool, cloudy weather.[26] In 1930 the state apple crop was short, yet Calhoun County had the second largest apple crop in its history. The years 1931 and 1932 were normal from the standpoint of weather and crop yield. In 1933 apples were lightly and unevenly distributed, and the crop of poor quality, though the yield in Calhoun County was nearly normal. The apple crop was again poor during the drouth year of 1934, though Calhoun County had a yield only slightly below normal. The year 1935 was excellent so far as apples were concerned. The yield in the region under study was the greatest on record--1,447,000 bushels. The 1936 crop was the smallest recorded since annual statistics have been kept. There were adverse weather conditions, including a severe winter and a record drouth. Apples were undersized and of poor quality; insect damage was above the average. Many of the older trees had been severely damaged by the unusually heavy crop of 1935. A heavy drop followed the September rains, doing additional damage to the crop, which totalled only 680,000 bushels. Apple production in 1937 was the largest in the state since 1932 and was the third largest on record in Calhoun County. All varieties produced well, save Willow Twig and Winesap. Worm and scab damage were conditions to blame. Such damage was considerable. As stated under the section on Statistics, many apples went to cider and vinegar mills, including first-rate fruit. Late frosts and adverse spring weather conditions seriously curtail the apple crop in Calhoun County about once in ten years. There was a total crop failure in 1910, a near total failure in 1921, and a very poor crop in 1933, all due to spring frost damage. The above crop fluctuations indicate the importance and qualification of Calhoun County as an apple producer. Under adverse weather conditions it has fared consistently better than the state as a whole. This upland region is favored during spells of

---

[26] Data from Illinois Crop and Live Stock Statistics. Refer also to Fig. 15.

bad weather.

There is a distinct trend toward greater use of fertilizers for the orchard lands. Better orchard sanitation is being practiced; this is especially helpful in combating the codling moth. The leaf roller did the most damage this year--this insect must be fought by spraying before the leaf has been rolled.

Meeting expenses, prior to harvesting the crop, is one of the biggest problems of the orchardist. Credit may be obtained from a number of sources, depending largely on the credit rating of the individual grower. Certain sources of credit include business houses, spray material and basket manufacturing concerns, banks, cold storage companies, and cooperatives. The vast majority of growers need and use supply-dealer credit.[27] More than 80% of the Calhoun County growers had the benefit of credit extended during the 1935-36 marketing season.

Because of the costs involved in growing, harvesting, and marketing apples, a number of cooperative organizations have started and held brief tenures. One with considerable prospect of success is the present Calhoun County Farm Bureau Exchange, with headquarters at Hardin and a packing shed beside rail facilities at East Hardin.[28] This is the only apple cooperative in the county. It handles orchard supplies and operates a washing and packing shed containing a large tandem grader. Washing and packing is on a custom-work basis, allowing freedom of grading and packing by individual orchardists. This cooperative has even operated a sales agency in St. Louis. Present difficulties and expenses seem to indicate a trend toward organization of the growers in order to successfully and profitably market apple crops.

OTHER FRUITS AND NUTS

Other fruits are of minor importance, though pears, peaches, and grapes can be successfully grown. There is one pear orchard of commercial importance near Kampsville. Fire blight does most damage on this fruit. There are three summer-

---

[27] Stanford and Decker, op. cit., pp 73-74.

[28] Ibid--Pages 24, 33, and 68.

cial peach orchards in Point precinct, with 1800, 1600, and 500 trees, respectively. The leading peach diseases and pests are Oriental Fruit Moth, Scab Brown rot, and Peacock Spot. Late freezes are too likely to occur to depend on commercial peach crops. Grape culture is not as yet prominent, though climatic and soil conditions are excellent--air drainage on the uplands is very good. If Illinois were a great wine-consuming state, this region could be an important producer.

This wooded region is important as a nut producing area, especially as regards pecans. In 1924 there were 11,000 trees of bearing age and 7,000 trees too young to bear. In 1929 Calhoun County ranked eighth in the state, with a total commercial production of 1890 pounds.[29] Pecan farms are scattered throughout the Illinois River bottoms. The pecan tree also grows wild here, as it is a native of this region.

GRAIN AND FORAGE CROPS

The fertile Mixed Loam of the bottoms, extending over 6% of the total area, is largely left in timber, because it is subject to frequent overflows. The swamps are likewise left in timber and tall grasses. The most extensive bottoms soil type is Deep Brown Silt Loam, covering 7% of the county. Each of the other bottomland types extend over less than 2% of the land area, save for the very fertile second bench between the true bottomland and the upland proper; the latter is largely Brown Mixed Loam and is scattered in numerous small patches over 8% of the County. There is one important area of Mixed Sandy Loam in the Mississippi bottom straight west of Hardin. There are two extensive areas of Deep Black Clay Loam in the Illinois bottom, but they are more difficult to work and are not as fertile as the loams. The Soils Map will aid considerably in locating the above soil tracts. Much of this area is subject to overflow in extremely wet years, but is otherwise quite fertile. Here we find most of the corn fields, as well as considerable acreages of wheat, tame hay, oats, and legumes, especially sweet clover, cow peas, and alfalfa. There are few orchards here, since general farming is the vogue; air and

---

29 U. S. Census for 1930.

water drainage are not suitable to fruit trees.

Corn leads all cereals in acreage, with an average of over 20,000 annually. (Fig. 17). The yield per acre has fallen below 30 bushels only three times in the last fourteen years. The acre yield has ranged from 10 to 49 bushels, with a substantial average of 34 bushels. Nearly 9,000 acres of wheat have been harvested annually, with an average of nearly 18 bushels per acre. In 1919, due to the World War, wheat culture reached great prominence, with a total harvested acreage of over 19,000. Oats is produced for grain and hay purposes, about 2,000 acres being threshed annually, the average yield being 36 bushels per acre. Considerable amounts of tame hay are produced, the annual averages showing 8,500 acres producing 1.5 tons per acre. Tame hay acreages show a sharp decline of about 5,000 acres annually since 1930. This is due to a distinct decrease in the number of horses and mules, (Fig. 19) and to the plowing under of more hay land in order to enrich the soil. Among the legumes, cow pea acreage is found to be relatively stationary, with an annual average of 1600. Starting in 1930, soy bean acreage has increased. The real gains have been made by sweet clover and alfalfa, especially since 1933. As seen in Fig. 18, the annual averages of 1900 and 1400 acres, respectively, are misleading. Both of these legumes are increasing rapidly in importance as fertilizers and for feed purposes. White potatoes have lost ground since 1924, only 300 acres being harvested annually at present, though the average for fourteen years is nearly 400 acres; one reason is the drop in price since 1919. The yield per acre has ranged from 57 to 95 bushels, with an average of 66 bushels. As seen in Fig. 20 the total value of all cereal and forage crops, including potatoes, has averaged $730,000 annually, with a definite increase since the extreme low of $440,000 in 1932.

LIVE STOCK AND RESULTING PRODUCTS

Calhoun County horses and mules have decreased in number over 1,000 head since 1925, as depicted in Fig. 19., but the total value has remained approximate-

Fig. 17

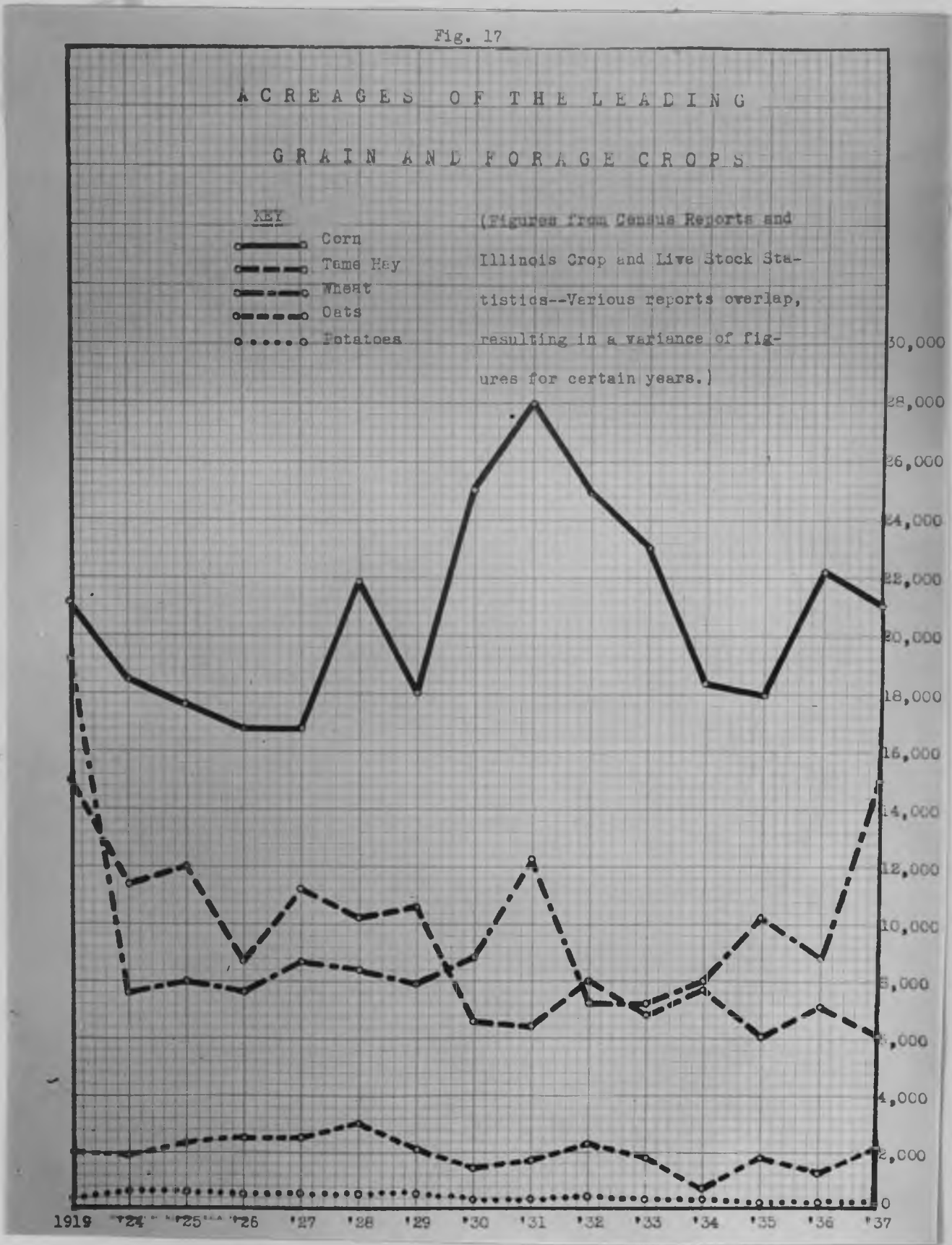

ACREAGES OF THE LEADING
GRAIN AND FORAGE CROPS
KEY
Corn
Tame Hay
Wheat
Oats
Potatoes
(Figures from Census Reports and Illinois Crop and Live Stock Statistics--Various reports overlap, resulting in a variance of figures for certain years.)
30,000
28,000
26,000
24,000
22,000
20,000
18,000
16,000
14,000
12,000
10,000
8,000
6,000
4,000
2,000
0
1919
'24
'25
'26
'27
'28
'29
'30
'31
'32
'33
'34
'35
'36
'37

Fig. 18

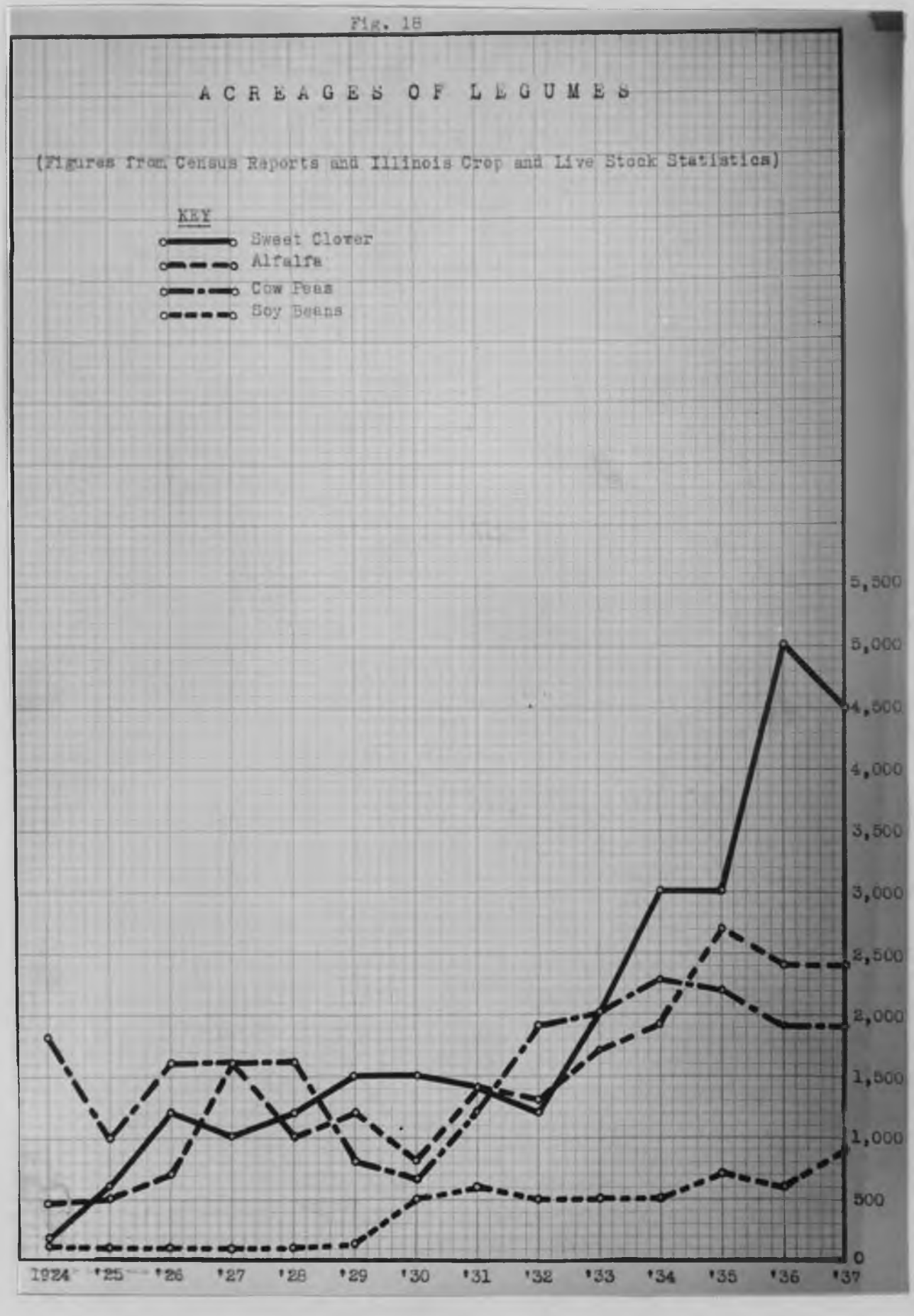
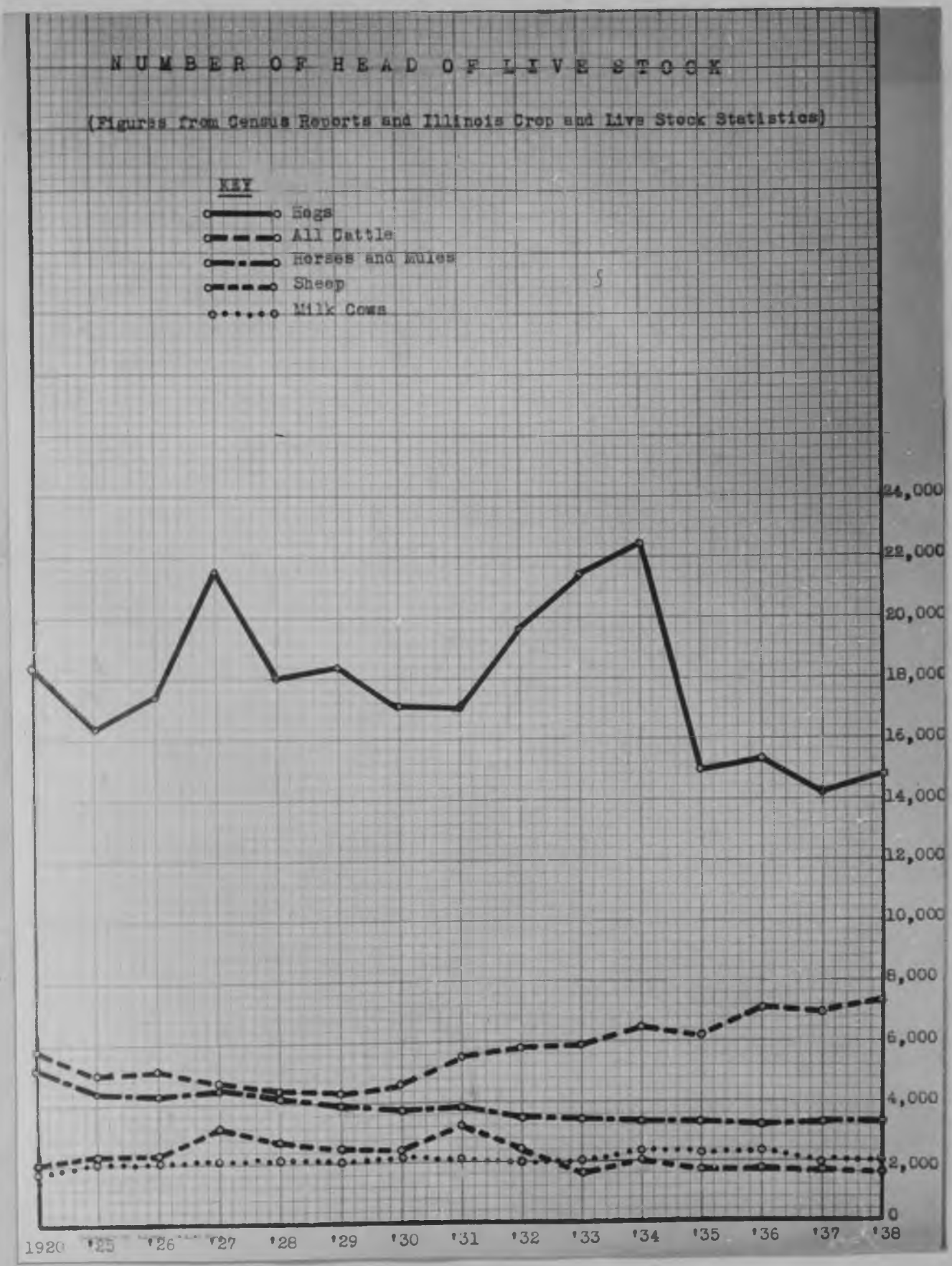

ACREAGES OF LEGUMES
(Figures from Census Reports and Illinois Crop and Live Stock Statistics)
KEY
Sweet Clover
Alfalfa
Cow Peas
Soy Beans
5,500
5,000
4,500
4,000
3,500
3,000
2,500
2,000
1,500
1,000
500
0
1924
'25
'26
'27
'28
'29
'30
'31
'32
'33
'34
'35
'36
'37

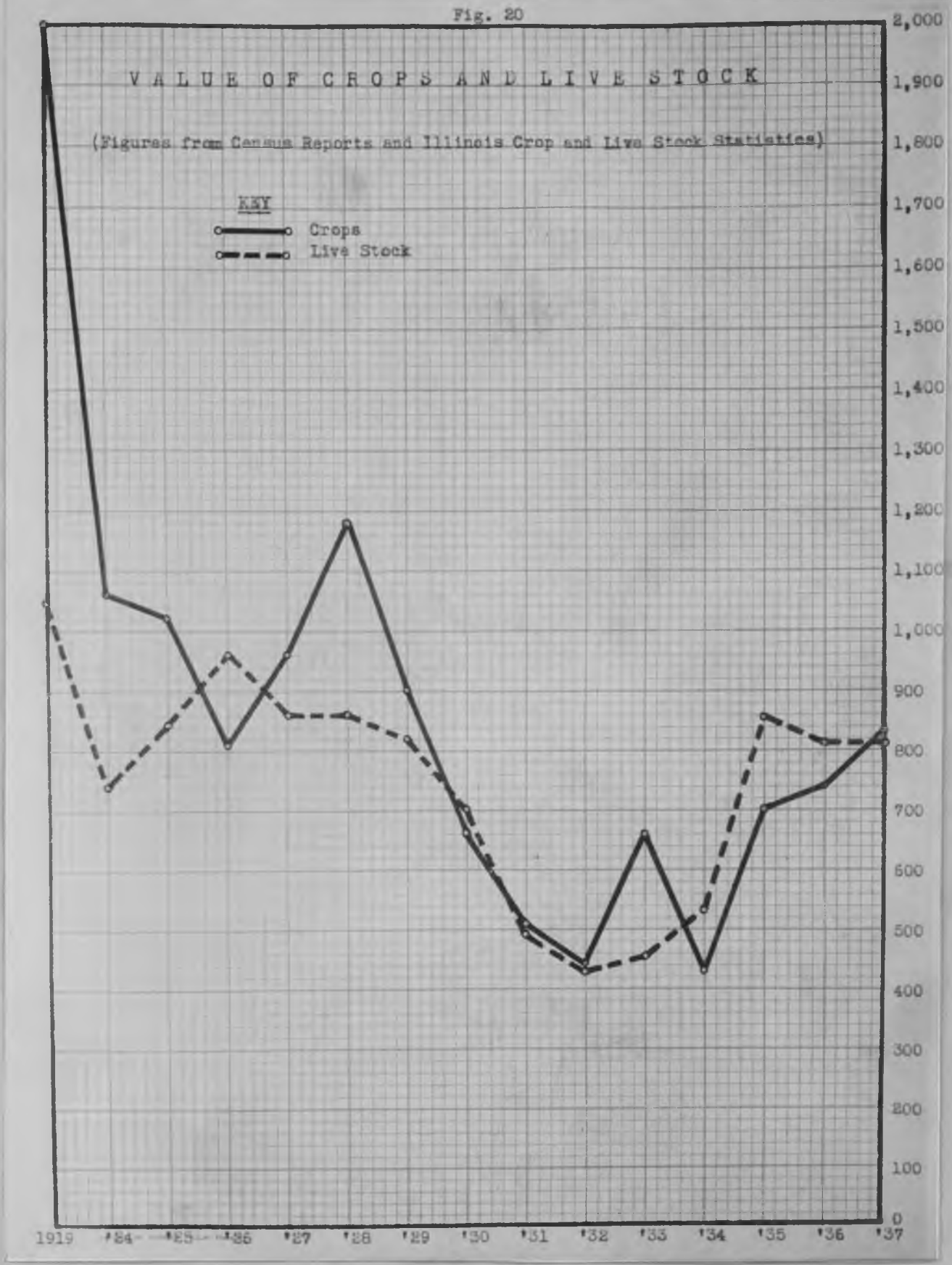
Fig. 19


NUMBER OF HEAD OF LIVE STOCK
(Figures from Census Reports and Illinois Crop and Live Stock Statistics)
KEY
Hogs
All Cattle
Horses and Mules
Sheep
Milk Cows
24,000
22,000
20,000
18,000
16,000
14,000
12,000
10,000
8,000
6,000
4,000
2,000
0
1920
'25
'26
'27
'28
'29
'30
'31
'32
'33
'34
'35
'36
'37
'38

ly the same. Horses and mules have declined in numbers with the increased use of machinery, to the point where their value has suddenly increased. Furthermore, tractors and trucks have their handicaps in the dissected uplands. The population being entirely rural, the number and value of milk cows have never attained the amounts reached in and near more densely populated centers. There is one farmer west of Hardin who could be called a dairyman, with a local market in the county seat. Pasteurization has not yet been practiced. The total number of cattle has shown a definite and fairly rapid increase since 1930. (Fig 19.), indicating that stock feeding is attaining considerable importance. Sheep raising has never been very important and their numbers are on the decline at present. They must be kept separate from the orchard trees and their wool is none too clean, if they are allowed to roam through the brush. Almost every farm has its hogs. There is considerable waste from the orchards, in addition to unlimited nuts and pasturage. Hogs can be raised more cheaply in these wooded uplands than in most places in the state. The total value of the above types of live-stock averages annually about $727,000, as seen in Fig. 20. Of 102 counties in the state, Calhoun ranks third from the bottom in total value.

This region bears the distinction of leading the state in the number of goats and annual amount of mohair clipped; the vast majority of the goats are Angora. Their chief value to the farmer is that they keep down briers and brush in wooded areas and woodland pastures. They thrive on the nuts and undergrowth of both the uplands and bottoms. Clipping usually takes place in April, though some are not clipped regularly. They need little care, except for breeding purposes. The winters are mild enough for goats of mature age. In 1925, the county had less than 300 goats. By 1930 there were nearly 700, which number reached almost 1100 by 1935. In 1924 there were 3,270 pounds of mohair clipped, which was 22% of the state total; in 1929 the county produced less than 9%. The remarkable part is that less than 30 farms reported goats in 1935. Christian and Greene Counties ranked next to Calhoun in mohair production. Greene County, across the river, led

Fig. 20


VALUE OF CROPS AND LIVE STOCK
(Figures from Census Reports and Illinois Crop and Live Stock Statistics)
KEY
Crops
Live Stock
2,000
1,900
1,800
1,700
1,600
1,500
1,400
1,300
1,200
1,100
1,000
900
800
700
600
500
400
300
200
100
0
1919
'24
'25
'26
'27
'28
'29
'30
'31
'32
'33
'34
'35
'36
'37

prior to Calhoun County's assumption of leadership. There is a future for mohair production in the uplands of this region, especially in the more densely wooded northern sector. (The figures in this paragraph are from census reports.)

EXTRACTIVE INDUSTRIES

LUMBERING

Cordwood and stave manufacture were important in Calhoun County long before apple culture gained prominence, since this region was for the most part, originally forested. Certain phases of lumbering are prominent today. The following is a list of forest products extracted in 1929:

Table VI--Forest Products of Calhoun County[30]

Product	Amount
Saw and veneer logs	535,000 board feet
Firewood	11,000 cords
Pulpwood	350 cords
Fence posts	84,000
Railroad ties	400
Poles and piling	300

Recently, 25 cars of ties per month are shipped from East Hardin.[31] They first go to a treating plant at Madison, Illinois. The tie sidings are used for furniture purposes. Rough lumber is used to make grain doors for railway cars. The woods are chiefly red and white oak. About 8 cars of pulpwood are shipped annually to the paper mills at Chillicothe, Ohio. The manufacture of barrel staves is of considerable import, the staves being stored north of Hardin, and later hauled by truck to St. Louis via the Golden Eagle Ferry. Timber resources are no longer being rapidly depleted, so that the rougher phases of lumbering should continue for some time.

---

[30] Data from U. S. Census of 1930.

[31] Data from the B.& O. station agent at East Hardin.

MINING AND QUARRYING

Though there are two thin coal veins in the south end of the county, coal can not be profitably mined, unless in connection with fire clay production and the manufacture of brick. The Thomas Pressed Brick Co. of St. Louis operated a large plant during the 1890's and the early 1900's near Winneberger, just west of Golden Eagle. They made an excellent grade of pressed brick from about 8 ft. of clay in that vicinity. Clay underlies the loess in much of the southern end. The chief needs are capital and transport facilities. The Thomas Brick Co. mined a two foot vein of coal found with the clay, the former furnishing half their fuel needs. Deposits of excellent clay are also found in Hazell Hollow north of Belleview and in DeGarmo Hollow north of Hardin. Some shales and slates are found scattered throughout the county. The mile long Cap-au-Gres bluff of St. Peters sandstone south of West Point Ferry contains much pure silica, but is topped by considerable loess and can be shipped only by water. Some quarrying was done at the south end of this bluff in past years, but this has been abandoned for some time.

The county contains vast limestone resources of various grades. Some can be found for almost every conceivable purpose. There is a continuous limestone bluff (or series of bluffs) along the Mississippi River from Golden Eagle to the Cap-au-Gres sandstone bluff. There are three small quarries along the Illinois River bluffs south of Hardin, two of which are in operation and are producing crushed rock for road purposes. The one large quarry in operation, a view of which is shown in Fig. 21, is located west of Golden Eagle. This quarry has been in operation for about twenty years and about 10,000 cubic yards have been quarried annually during recent years.[32] From here came the limestone to build the Brussels School, which houses the only four year high school in the county. (Fig. 22). Much

---

[32]Data from Paul Herter, owner of the Golden Eagle Quarry.

Fig. 21

One of the caves in the quarry near Golden Eagle. Limestone from here was used to build the Brussels School, shown in Fig. 21. Note the stratified rock layers, atop which is a relatively thin coating of soil, becoming much deeper a short distance back. An orchard is atop this particular section. Some of the quarrying is of the open pit type, but the greater portion is of the type shown above.

Fig 82.

The Brussels School, which houses the only four-year high school in the county. The limestone used for the building's construction was quarried at Horter's Quarry, west of Golden Eagle Landing.

of this limestone has been used by the government in the construction of locks and dams on the Mississippi River. Other uses have been for riprap, derrick stone, and paving stone. The Golden Eagle Quarry may temporarily close down after this season. If labor difficulties can be corrected, limestone should be available to construct the good water roads so sadly lacking at the present time.

FISHING

Fishing is of considerable import, especially along the Illinois River. The chief commercial fishermen for this region are located at Pearl (Pike County), Kampsville, Hardin, and Grafton (Jersey County). Fishing is in progress from June to April. Climatic conditions determine the amount of the catch during any month. A phenomenal catch of 40,000 pounds was recorded during two weeks in January, 1918, near the Kampsville Dam.[33] The leading varieties of commercial fish caught are Carp, Buffalo, and Cat. Other varieties are Large Mouthed Black Bass, Blue Gill, and Black and White Crappies. Mussel Shell fishing is still carried on between Hardin and Kampsville. Most of the fish are caught with hook net and sein. Picnics boost summer sales in July, August, and September. Much of the catch is destined for Boston, New York, and Philadelphia.

There is no manufacturing, as such, save that which has been related concerning the agricultural and extractive activities.

TRANSPORTATION

Transportation from within the county to points outside was until recently almost entirely by steamboat or ferry, the result of the county's being surrounded

---

[33]Data from Mr. Pantore, commercial fisherman of Kampsville.

on three sides by rivers. The steamer held its own as the chief mode of transport for freight until 1926. The automobile and the motor truck were the first to penetrate the isolation of this region. Transport within the county was by wagon, and later by truck. More rapid progress in highway improvement has been made since the completion of the Joe Page Bridge across the Illinois River at Hardin than during any previous period. The steamer, with its accompanying barges, is still a link in the transport facilities, but only for certain types of bulky materials, as sand, gravel, etc.

Land transport has left river transport far in its wake. The auto and the truck are the most important conveyances for passenger and freight, respectively. The ferry is still of great importance in linking certain highways leading out of Calhoun County to those in other counties and in Missouri. There are three ferries operating on the Mississippi--at Hamburg, West Point Landing, and Golden Eagle. The two operating on the Illinois are at Kampsville and near the southeastern tip connecting the Deer Plain road with Grafton.

Highway conditions may be described as good to fair in dry weather and fair to poor in wet weather. Road maintenance could be much improved. There is only one stretch of concrete road leading from Hardin north to Detroit in Pike County, (Highway 100). South of Hardin on the way to Brussels most of the road has been black-topped this fall. (1938); it is an excellent all-weather road. (Fig. 25). The main highway from Batchtown north through Hamburg and Belleview is constructed of rock and gravel. It is passable in all sorts of weather, though extremely rough in places and with many streams to ford. This highway is in process of reconstruction and bridges are being included. Roads traversing the county from east to west are not in the best of repair, though the Batchtown is the best. Others passable under almost any weather conditions are those leading west from Hardin, north of Michael, and Kampsville.

As regards town locations with respect to highways, Calhoun County had only

Fig. 23

A view of the Hardin-Brussels highway, looking north. This is the only road in the county at present with the tar and sand surfacing known as black-top. Note the loessial bluff cut through to construct the road. These loessial bluffs are common in the rolling upland area of Point Precinct. Black-top roads vie with concrete in this area, so far as the most improved highways are concerned.

twenty farms located on a concrete road in 1930; this was the lowest number for any county. Over 40% of all farms were located on unimproved dirt roads, as compared with only 8% for the entire state.[34] There is not a paved street in the county, save for the spur from Route 100 into downtown Hardin.

The bridge over the Illinois at Hardin now carries over 80% of all incoming and outgoing traffic for the entire county. This bridge was opened for traffic in July, 1931. It is the low level type with a vertical lift channel span; it has a horizontal clearing sweep of 300 ft. between the fender piers and a vertical clearance of 65 ft. above high water. There are eighteen spans in all with an overall length of 2,397 ft. The total cost, including the approaches, was $670,000. The Frontispiece shows the channel span down for highway traffic, while Fig. 24 shows the channel span raised to permit the passage of river traffic.[35]

Large amounts of orchard and lumber products are hauled by truck to East Hardin and there transferred to railway facilities.(Fig. 25.) The railroad is a branch line of the Baltimore and Ohio, formerly the Chicago & Alton. Train service is three times per week, except during the peak apple harvests, when service becomes daily. There is no regular passenger or mail service by rail to or from East Hardin. There are as yet no air transport facilities; the county has not been especially endowed by nature as regards possible sites for landing fields.

EDUCATION

As stated previously in this study, the population of the county was 8,034 in 1930. In 1936 there were 3,009 boys and girls under 21 years of age, 73% of which were of school age.

---

[34] Data from the U. S. Census for 1930.

[35] Data in this paragraph furnished by G. F. Burch, Bridge Engineer of the Department of Public Works and Buildings, Division of Highways, State of Illinois.

Fig. 24

Fig. 24

THE JOE PAGE BRIDGE AT HARDIN

The Hardin Bridge, with lift span upraised to allow the passage of river traffic. In the left foreground may be seen the ferry, which preceded the bridge. At the extreme left, at one end of the bridge, may be seen the B. and O. railroad station at East Hardin. In the middle background are the Jersey County bottomlands, with their scattered farmsteads. In the distant background may be seen the gently sloping bluffs of the Illinois River Valley. Note the hollows intersecting the bluff front; these hollows are also typical of the Calhoun County landscape. As can be seen, the majority of the farmsteads are located at or near the bases of the bluffs and on the bench lands, in preference to the true bottomlands.

Fig. 38

A view of the East Hardin railroad yards. This view was taken from the cave in the east face of the Hardin Bluff, north of town. Near the eastern approach to the right is located the railway station. In the left center can be seen a line of railway cars. There is a locomotive near the highway just to the left of the station. Beyond the railroad yards are the bottoms on the Jersey County side of the Illinois river. In the extreme distance are the partially wooded Jersey bluffs.

Table VII--School Attendance in Percentages of Those Attending, By Age Groups.[36]

	7-13	14-15	16-17	18-20
Illinois	98	92	57	20
Calhoun County	97	81	31	9
Calhoun's % of the State average.	99	88	54	45

The above table indicates the rapid dropping out of school of those over fifteen years of age, the percentage of the county decreasing to about half of the percentage of the state as a whole. There is not one kindergarten in the entire county. In 1936 there were 1,475 enrolled in the elementary schools and 151 in the secondary schools. Thus we learn that only 72% of those of school age (6-21) were enrolled, of which 52% were boys. Hardin, the county seat, has in 1936 an enrollment of 139 in the first eight grades and 80 in the three year high school.[37]

Schools are in session an average of 8.8 months per year.[38] Of the sixty teachers and principals, forty-three are women. Salaries are low, being less than half the annual average for the entire state. The forty-three women instructors averaged $570 for 1936 as contrasted with the state average of $1,207. The seventeen men averaged $770 as contrasted with the state average of $1,856. Salaries of Calhoun County women teachers were only 44% of the state average, while those of the men teachers were 40% of the state average. Only nineteen teachers had had over ten years experience, while eighteen had served but two years in the county. The low salaries cause a fairly rapid turnover, though it must be remembered that living expenses are lower here than in most parts of the state. The County Super-

---

[36] U. S. Census for 1930.

[37] Data furnished by the Hardin High School Principal.

[38] Forty-first Report of the Superintendent of Public Instruction for Illinois, 1937.

intendent's salary is $2000 per year.

In the Mississippi drainage area are found only two two-year high schools, at Batchtown and Hamburg. Hardin and Kampsville, on the Illinois side of the divide, have three-year high schools, while the only four-year high school is located at Brussels. If pupils wish to complete their high school education, they are forced to commute to schools in other counties, usually to Jerseyville in Jersey County (nineteen miles from Hardin) or to Pearl in Pike County; the county pays their tuition. Only 15% of those entering high school complete the four years.[39] The first graduates from Hardin's three-year high were in 1931. Hardin recently completed a gymnasium and voted overwhelmingly in favor of a new four-year high school but a legal irregularity temporarily stalled the project.

There is not a high school in the county but that is connected and housed with a grade school. The school districts are rather large, with up to fifty pupils in some of the rural schools; the latter are in session eight months and are under the supervision of a teacher salaried at $70 per month. There is a very interesting Catholic-Protestant educational arrangement at Brussels--a parochial grade school and the public high school are housed in the same structure.

SOCIAL FEATURES

STANDARD OF LIVING

Living standards are not as yet on a par with the state average, as certain modern conveniences or necessities are lacking. Many of the basements are small, while many do not even have them. Furnaces and bathrooms are few and far between. There is not a public library in the county. A number of people still go to church in the horse-drawn family carriage. There is a great need for rural electrification, as only the better farm homes near the larger villages have electrical facilities. The Mississippi Valley Power Co. has a transmission line which enters

---

[39] Estimate of Cube Turnman, County Superintendent of Schools.

the county from the northwest, crosses from west to east just to the north of Batchtown, and runs south along the Illinois bluffs into Missouri. The huge power plant at Keokuk, Iowa, is the source of the power. Mr. Allison, farm adviser for the county, is working for the electrification of farms and there is now a twenty-two mile project in the north of the county. The status of farm facilities on the 1,054 farms in the county is depicted in Fig. 26. Calhoun County ranks consistently below the average for the state, save with respect to motor trucks. The first public sewage system in the county is being constructed in Hardin at the present time.

SOCIAL LIFE AND RECREATION

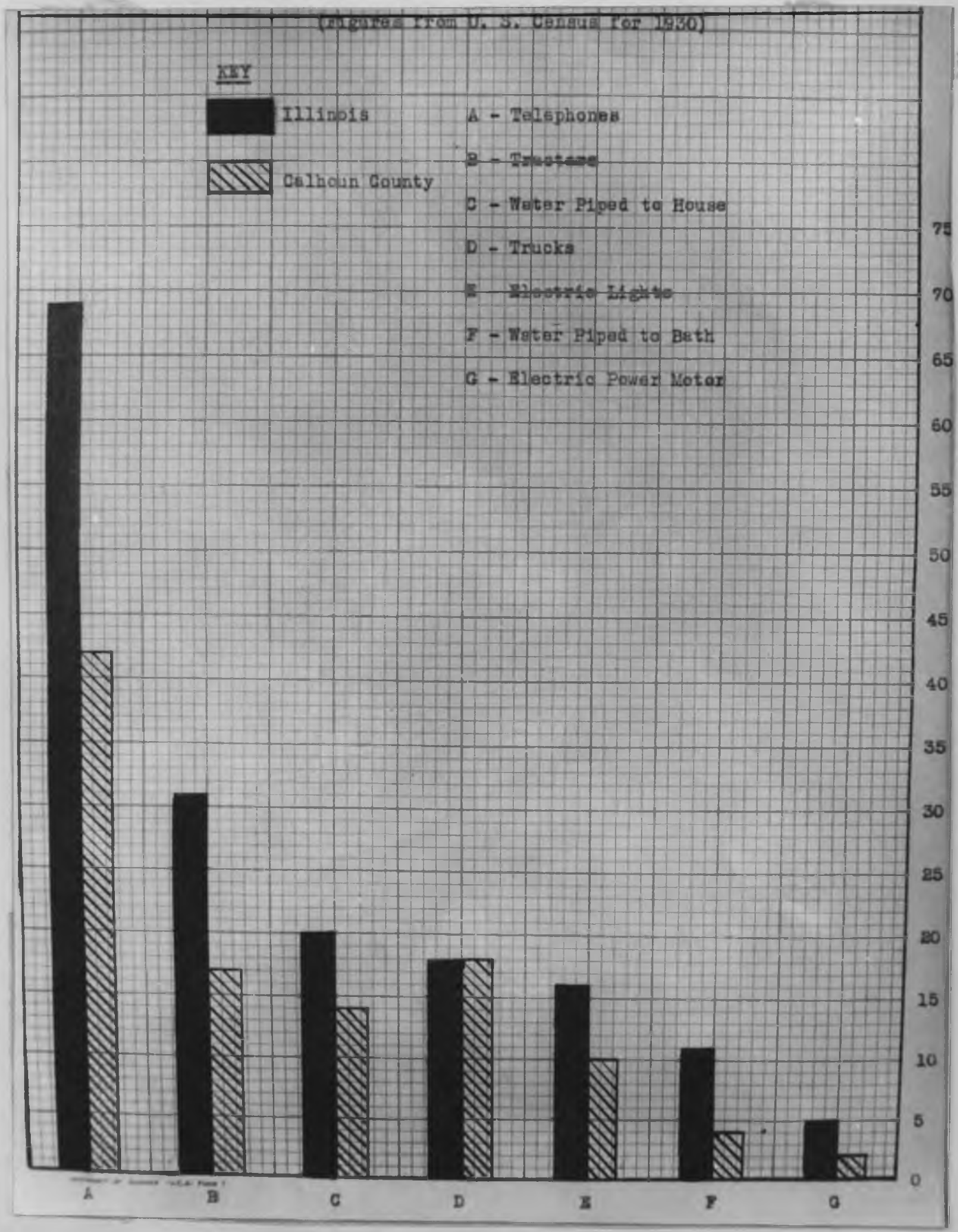
The churches are the centers of community life. Besides holding religious services, they sponsor socials and Euchre parties. There are a number of public dance halls. Fraternal organizations and lodges are also of importance. During the summer and fall, outings, picnics, and baseball games are recreational outlets. There are only three schools with gymnasia--Batchtown, Brussels, and Hardin. There are three moving picture theaters, at Hardin, Kampsville, and Haag's Corner.

Haag's Corner requires further comment. It is located several miles south of Brussels at a fork in the main highway, one branch leading to Deer Plain, the other to Golden Eagle. Haag's Store is a business institution characteristic in this county. This store is housed in a huge building in which any type of material is retailed, including liquor, soda, leather goods, groceries, meats, paints, furniture, dry goods, clothing, baked goods, shoes, etc. This movie house draws patrons from the entire southernmost precinct of the county [illegible] including Golden Eagle, Deer Plain, Brussels, and the surrounding farmsteads. The writer visited general ("all round") stores of the above type in Batchtown, Hamburg, and Hardin, in addition to the one at Haag's Corner. These stores serve as "idling headquarters" for the general public. They are much frequented by idlers, especially at night and during

Fig. 26

PERCENTAGES OF FARMS WITH CERTAIN FACILITIES

(Figures from U. S. Census for 1930)



seasons when work is slack. These spots also serve as information headquarters, meeting places for business transactions or friendly conversing, and starting points for journeys through or out of the county.

The people themselves are very hospitable and congenial. Natives become very attached to this picturesque region and are loathe to leave it for any great length of time. There is ample opportunity for hiking and hunting in summer and winter. Flat and Swan Lakes in the Illinois River bottom are much frequented duck hunting grounds in fall and winter.[40] The Bay Bottom in the northwestern part of the county is also a good duck hunting area. The county is a perfumed flower garden during apple blossom time; during this period (usually in April) tourists enter the county in large numbers. (Fig. 27.) Even the theater at Hardin is the Apple Blossom Theater. The autumn season is also beautiful, with the trees displaying their reds and golds.

A concrete, gravel, and black-top highway leads from Hardin to Pere Marquette State Park, less than fifteen miles distant. This park is situated a few miles northwest of Grafton, just across the Illinois River from Calhoun County. It contains 1,670 acres and is the largest recreation area in the state. A circuitous highway threads its way up to the highest ridge in the park. When the weather is clear one can view the waters of both the Illinois and the Mississippi.

---

[40] Data from Frank Bellrose of the Illinois Natural History Survey.

Fig. 27

"Apple Blossom Time" in Calhoun County. This healthy orchard in full bloom is located on a hillside along the Batchtown road on the eastern edge of Batchtown itself. Note the open woodland pastures on the right.

SUMMARY

Calhoun County is a semi-isolated region hemmed in by the Mississippi and Illinois Rivers. This isolation is likely to continue for some time, as the Illinois is bridged only at Hardin, while the Mississippi has yet to be bridged. There is a possibility of the latter near the Golden Eagle Ferry in the not-too-distant future. Much of the area will remain wooded, especially the easily flooded bottoms and the more erosive upland areas. There is little doubt, but that general farming will indefinitely remain the main stay of the bottoms, while orchard culture will be the cash crop of the uplands. Many orchards have "run down" and cheap land is available. Apple growing has become more hazardous and less profitable of late years, causing a number of the older orchards to revert to woodland and pasture. Stock raising is rapidly increasing in importance as orcharding becomes less profitable.

Among non-agricultural activities, rough lumbering should continue its importance indefinitely with a moderate degree of conservation. Railway ties and barrel staves are among the more important products. Fishing will continue to thrive along the river banks and in the lakes of the bottoms. Mussel shells have, however, lost their former importance. Coal-mining will never be important in itself, but limestone quarrying and clay extraction should become prominent activities at a later date. A large amount of good quality limestone is available for agricultural, building, and road-making purposes. A good quality fire clay for brick making is to be found in the northern, central, and southern sections of the county. Transport facilities are gradually being improved, with much work still to be done. The crying need is a set of all-weather roads to connect the main highway along the Illinois bluffs with the one now being constructed along the Mississippi bluffs. Point precinct has no good road constructed along its western

border.

The population is almost certain to remain rural. There is little likelihood of industrial activity in the modern sense in this greatly dissected and unglaciated region. The standard of living will remain below the average for the state because of its isolation, in addition to its rural character. Conditions are bound to improve with the steady increase in all-weather highway mileage and the increase in rural electrification. The people are in favor of added educational facilities. Tourism should become of added import with the advent of better road facilities. This region is picturesque in spring (apple blossom time) and autumn (when the trees have turned to red and yellow and gold). With the breakdown of the county's isolation will occur a change in its rustic atmosphere. There is little present indication, however, that this region will lose its unique position in Illinois.

BIBLIOGRAPHY

Alvord, J. W. and Burdick, Chas. B., The Illinois River and Its Bottom Lands, Illinois Dept. of Public Works and Buildings, Division of Waterways, 1918.

Carpenter, Geo. W., History of Calhoun County, Jerseyville, Illinois, 1915.

Ekstrom, V. A., Marketing the 1937 Crop of Fall and Winter Apples in Western Illinois, University of Illinois, Agricultural Experiment Station, 1938.

Forbes, S. A. and Cross, A. G., The Numbers and Distribution in Summer of Illinois Land Birds of the Open Country, Illinois.

Nat. Hist. Surv. Bull., Vol. 14-No. 6-1921.

Krey, Frank-Structural Reconnaissance of the Mississippi Valley Area from Old Monroe, Mo., to Nauvoo, Illinois, Illinois State Geol. Surv. Bull. No. 45, Pages 45-6, 1924.

Krey, Frank and Lamar, J. E., Limestone Resources of Illinois, Illinois State Geol. Surv., Bull. No. 45, Pages 23-43 & 210-12, 1925.

Lamar, J. E., Geology and Economic Resources of the St. Peter Sandstone in Illinois, Illinois State Geol. Surv., Bull. No. 53, Page 168, 1928.

Lamar, J. E., Preliminary Report on the Economic Resources of Calhoun County, Ill. State Geol. Surv., Report of Investigations, No. 8, 1926.

Lamar, J. E., Refractory Clays in Calhoun and Pike Counties, Illinois State Geol. Surv., Report of Investigations, No. 8, 1931.

Lamar, J. E., The Economic Geology of the St. Peter Sandstone of Illinois, The Illinois Engineer, Vol. 5, No. 5.

Lloyd, J. W. and Newell, H. M., Marketing Calhoun County Apples, Univ. of Ill., Agricultural Experiment Station, Bull. No. 332, 1928.

Mumford, Jr., H. W. and Decker, S. W., An Economic Study of Some Problems of Western Illinois Apple Growers, Farm Credit Administration in cooperation with the Illinois Agricultural Experiment Station, Miscellaneous Report

No. 13, 1937.

Telford, Clarence J., Third Report on a Forest Survey of Illinois, Ill. Nat. Hist. Surv., Bull., Vol. 16, No. 1, 1926.

Weller, Stuart, Notes on the Geology of Southern Calhoun County, Illinois State Geology Survey., Bull. No. 4, Pages 219-233, 1907.

Worthen, S. E., Geology of Calhoun County, Original Geological Survey of Illinois, Vol. IV., 1870.

------ Calhoun County Soils, Univ. of Ill., Agricultural Experiment Station, Soil Report No. 33, 1928.

------ Climatic Summary of the United States, U. S. Dept. of Agriculture, Weather Bureau, 1930.

------ Directions for Spraying Fruits in Illinois, Univ. of Ill., Agricultural Experiment Station, Circular No. 467, Revised for 1933.

------ Flood Control Report, Illinois, Dept. of Purchases and Construction, Division of Waterways.

------ Information Pertaining to Farm, Home, and Community, Type of Farming Area 8B, University of Illinois, Agricultural Experiment Station, 1936.

------ Agricultural Census of the United States, 1925 & 1935.

------ Census of the United States, 1870, 1880, 1890, 1900, 1910, 1920, 1930.

------ Illinois Crop and Live Stock Statistics, 1924-35 to date.

FRONTISPIECE